STEEL

PRODUCTION

PROCESSING

DISTRIBUTION

USE

EDITORIAL STAFF

E. L. SHANER
EDITOR

E. C. BARRINGER
MANAGING EDITOR

ASSOCIATE EDITORS

A. J. HAIN — E. F. ROSS
G. H. MANLOVE — J. D. KNOX
A. H. ALLEN

New York
E. C. KREUTZBERG — B. K. PRICE
L. E. BROWNE

Pittsburgh — E. A. FRANCE, JR.
Chicago — W. G. GUDE

Washington — L. M. LAMM
London — VINCENT DELPORT

BUSINESS STAFF

GEORGE O. HAYS
BUSINESS MANAGER

New York
E. C. KREUTZBERG — E. W. KREUTZBERG

Pittsburgh
S. H. JASPER

Chicago
L. C. PELOTT

Cleveland
JOHN HENRY — R. C. JAENKE

R. T. MASON
CIRCULATION MANAGER

CONTENTS

April 17, 1933

THE WEEK IN PERSPECTIVE 7

The Voice of Industry 8
Steel Rate, Crossing 20 Per Cent, Approaching Profit Area 9
Ore Producers Appeal to Public in Drive To Cut Taxes 10
Europe Better as Entente Is Renewed, Britain Reorganizes 11
Business News from Washington 12
Mirrors of Motordom 13
Iron, Steel Division Offers Valuable Foreign Trade Data 14
Personals 15
New Luria Bros. & Co. Office at Chicago 16
Here and There in Industry 17
Obituary 17

EDITORIAL--Take Out Dynamite, Retain Teeth in Black Bill! 18
THE BUSINESS TREND 19

Stabilizing 18-8 Stainless Steel by Addition of Titanium 21
Tractors Speed Unloading of Large Machinery Shipment 24
Grandstand Deck Formed of Steel Plates, Arc Welded 25
Making the Most of Methods and Materials 26
Improving Open-Hearth Design—Part V, Continued 27
Progress in Steelmaking 29
New Equipment 30

MARKET REPORTS AND PRICES 31-44
CONSTRUCTION AND ENTERPRISE 45
ADVERTISERS' INDEX 50

STEEL is published every Monday by PENTON PUBLISHING CO., Penton Building, Cleveland, O. JOHN A. PENTON, *Chairman of the Board;* C. J. STARK, *President;* J. D. PEASE, *Vice President;* F. V. COLE, *Secretary.*

Member Associated Business Papers Inc. and National Publishers Association. Branch Offices: New York, 220 Broadway; Chicago, Peoples Gas building; Pittsburgh, Oliver building; San Francisco, Claus Spreckels building, 703 Market street; Washington, National Press building; Cincinnati, Schmidt building; London, Caxton House, Westminster, S. W. 1; Berlin, Lichterfeld-West, Dahlmerstrasse, 64a, Germany. Subscription in the United States, Cuba and Mexico, one year $4, two years $6; in Canada one year $6.60, two years $11.20; in Great Britain and European countries, one year £2; two years £3.

Entered as second class matter at postoffice at Cleveland under the Act of March 3, 1879.

Copyright 1933 by the Penton Publishing Co.

HIGH AND LOW CARBON
STRIP STEEL

HOT AND COLD ROLLED
-- in all tempers

The rapid growth and development of modern forming and stamping practice has widened the scope and created new demands for strip steel in many branches of industry.

Since 1897 we have specialized in high quality Hot and Cold Rolled Strip Steel, which constantly met the increasing requirements in this field.

A wide range of high and low carbon strip steel in all tempers—widths from ¾" to 24"—hot and cold rolled —coiled or cut to lengths that best suit your needs.

Also Bright Cold Rolled ALLEGHENY STAINLESS STEELS in all grades. Excellent for drawing and forming. Resists corrosion, may be welded and soldered.

Save with Steel

WEST LEECHBURG STEEL COMPANY

General Offices: UNION NATIONAL BANK BLDG., PITTSBURGH, PA.

Branch Sales Offices:

NEW YORK	CHICAGO	DETROIT
DAYTON, OHIO	ST. LOUIS	TOLEDO
NEWARK	PHILADELPHIA	(Dean Higgins & Co.)

BUFFALO—ROCHESTER—SYRACUSE
(Brace-Mueller-Huntley, Inc.)

WAREHOUSE STOCKS of COLD ROLLED STRIP STEEL are carried by:

EDGCOMB STEEL CO.—PHILADELPHIA
EDGCOMB STEEL CORP.—NEWARK
JOS. T. RYERSON & SON—CHICAGO

Volume 92 Number 16

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

STEELMAKING operations crossing 20 per cent on the way up and gaining momentum; automobile production doubling the March rate and indicating the best month since June; the scrap market boiling, with prices again swinging upward and one dealer alone loading eight export cargoes; the railroads buying rails, with hints of an equipment program as part of the forthcoming reorganization—here is action at last, action of the sort President Roosevelt has been trying to stimulate.

Need Only 10 Points More for Profit

At 20.5 per cent, steelworks last week canceled all of the bank holiday loss and apparently resumed the spring upturn (p. 9). So far-reaching are the economies of producers that a rise of 10 points would almost restore profits. . . . From raw materials, consumer interest has swept on to finished material, only building failing to keep abreast (p. 31). Most auspicious is the intent of users to cover ahead. Pig iron shipments already in April have topped all March.

Europe Also Sees a Brighter Lining

Only time, of course, can assay whether this is merely "a" turn or "the" turn so fervently hoped for, but market news from Europe helps to shore up the expectation (p. 43). Production of steel in Great Britain in March was the largest in 30 months, and that of pig iron in 12; rising prices on the Continent are the sequel to reorganization of the steel entente; Japan continues an active, general buyer; France is negotiating attractive tonnage for Russia.

New Entente Sets Up Monroe Doctrine

A review of developments in Europe in the first quarter also is conclusive that the psychological factors so largely responsible for the world crisis are in reverse (p. 11). Britain is rationalizing her iron and steel industry and regaining her favorable balance of foreign trade; the political upheaval in Germany apparently will not be detrimental to industry; the entente as reconstituted provides for respect for home markets. Europe is far from prosperous, major changes in the economic and social structure are in process, but recovery is believed under way. . . . Russia continues ambitious for her revived industry, planning (p. 16) an output in 1933 of 9,000,000 tons of pig iron, 8,900,000 tons of ingots, 6,200,000 tons of finished steel.

Crawler Tractors Speed Unloading Job

Craving action in unloading 200 cars of machine tools and other heavy plant equipment it was moving from a Vermont branch, a Cleve-

New York Jehus keep two men busy in one welding shop doing nothing but repairing taxicab wheels by the oxyacetylene process

land manufacturer conscripted (p. 24) two rubber treaded crawler tractors, which quickly and efficiently extricated the machines from the cars and skidded them across the plant floor to their assigned places. . . . Detroit is witnessing the greatest display of action in months in its automotive industry (p. 13), with a promise of fireworks in the low-price market when the new Ford arrives. In figuring costs, material and labor are secondary items to overhead and selling expense.

Ore Operators Carry Tax Plea to Public

Believers in direct action are the Lake Superior iron ore interests. Threatened with strangulation by high taxes, 16 leading mine operators have aimed broadsides at the public, and indirectly at legislators, in Minnesota and Michigan newspapers (p. 10). Now above ground are 47,000,000 tons of ore, sufficient for 6 years at the present rate of consumption. Operating costs have been reduced and fees adjusted, but taxes remain inflexible. . . . With President Roosevelt proposing development of the Tennessee river valley, tales of enormous iron ore deposits in Tennessee, said to be 5,000,000,000 tons, are revived (p. 11). Geologists concede large deposits, but caution that it is low grade and unusable without beneficiation.

Corrosion Foiled when Titanium Protects

Intergranular corrosion in austenitic steels of the 18-8 chrome-nickel type, especially perplexing in metal which has been welded, is prevented by the addition of an appropriate amount of titanium (p. 21). Metallic titanium at least six times the carbon content of the steel less 0.02 per cent, is the specification. Heat treatment of the titanium-treated alloy after welding is unnecessary. . . . Corrosion-resisting steel will be tried (p. 26) for signal masts and antennae yards for American warships. . . . A more peaceful government gesture than warships is the foreign trade statistical service made available (p. 14) by the iron and steel division, department of commerce.

Washington Going Radical on Hours and Tariff

Onerous as taxes are to iron ore and other departments of the iron and steel industry, the threat of a 30-hour work week is even more serious (p. 12). Industry, however, has a hunch that the bills with which President Roosevelt has expressed "sympathy in principle" are so drastic as to be unconstitutional. . . . Almost as radical is the proposed treatment of the tariff (p. 12), likely to be a trading point when the President and Secretary Hull dicker for war debt payments and economic preference with the 42 nations which have been invited to Washington.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

Cites Need for Additional Steel Casting Classifications

To the Editor:

Your recent issues have carried something of vital interest to every steel foundry organization trying to operate or do business today.

The facts which you have published in the way of a plain statement of production conditions and operating losses, along with schedules of prices should become fundamental in the minds of the buyers and the business men of the country, such that the general sentiment should be along one line only. We are in business for the welfare or benefit of this country, and no business can carry on without at least making a fair profit, and the country without business or manufacturing is doomed to return to the soil and cities will become graveyards.

I note your set of prices so far only include those of the larger or heavy tonnage buyers, such as rolling mill or steelworks requirements. I trust it won't be long before you will be able to investigate the higher grade fields, which require 80 to 100 per cent finished castings under all forms of inspection, which naturally means greatly increased costs and very much higher prices.

An industry as large as the steel founders or producers certainly should have proper recognition in the trade, carrying schedules of costs the same as produced by other large industries in the past. Such information, when properly carried out, spells stability for any industry.

RALPH H. WEST, President
The West Steel Casting Co.

Cleveland

Forthcoming Monographs on Alloys of Iron

To the Editor:

It was a pleasure to notice in your last issue an appreciative review of our first monograph on "The Alloys of Iron and Molybdenum" by J. L. Gregg, which reminds me that in the interview published last September regarding our work the use and influence of molybdenum was given undue emphasis. As one of my friends in the steel business has pointed out, "All of our alloy steels have definite fields of usefulness. In some applications many of the combinations are interchangeable, while in others certain combinations of composition will produce results that others are not capable of. Each has its advantages and limitations."

We are hoping to expand the fields of usefulness of all the alloy steels, without distinction, by means of our monographs. The useful knowledge of the world is being brought together and made available to everybody. Our next volume will be published in the near future on "The Alloys of Iron and Silicon," to be quickly followed by the monograph on "The Alloys of Iron and Tungsten." Considerable work has been done in preparation for the monographs dealing with the alloys of iron with chromium, vanadium, nickel, copper and manganese, as well as monographs on iron and carbon and on pure iron. In addition a very valuable and carefully indexed file of abstracts is being built up at New York which already numbers over 12,000 and which may be consulted by those interested in alloy steels for a suitable fee.

G. B. WATERHOUSE, Chairman and Director
Alloys of Iron Research,
Engineering Foundation.

29 W. Thirty-ninth St., New York.

Steel Rate, Crossing 20%, Is Approaching Profit Area

STEELMAKING operations crossed 20 per cent, on the way up, in the week ended Saturday, April 15, regaining the stride of early February, prior to the slump which the banking holiday accentuated in March, and attaining the highest level since the first week of June, 1932.

If tentative schedules for this week are adhered to, a further expansion of a point or two is assured. At the half-way point, April gives indications of approximating the official 21.94 rate of last April, thus exceeding every month since.

This improvement appears to have such a wide base, all major consuming outlets excepting building participating, that executives of the iron and steel industry are again visualizing the approach of a profit area.

At the recent annual meeting of the Republic Steel Corp., Tom M. Girdler, president, declared that due to economies, his corporation could make money at 35 per cent at present prices, and at 25 per cent or slightly less could meet ordinary expenses and increase its cash.

See Profit at 30%

This is believed to be typical of the entire industry. A year ago, it was said that black ink would replace red at 40 per cent, but further economies have narrowed the margin and one large corporation is understood now to figure 30 per cent as the beginning of i s profit area.

Last week, steelmaking operations at Chicago averaged 20 per cent and on Saturday were up to 22. Pittsburgh expanded four points to 18 per cent. Youngstown averaged 19 per cent and was to open this week at 20. Eastern Pennsylvania was up one point to 12½ per cent. An adjustment at Cleveland lowered the rate one point to 32 per cent, Buffalo lifted five points to 19 per cent, while Birmingham this week was scheduled to jump from 12½ per cent to 20.

Following are details by districts:

Chicago

Progressive improvement in open-hearth operations the past week brought the rate to 22 per cent by the end of the week, or an average of about 20 per cent for the week. This compares with 15 per cent one week previous.

The number of active steelworks blast furnaces is unchanged at six of 36 stacks, blowing in of one corporation stack offsetting the banking of one independent unit. Finishing mill operations are well maintained with rail mills resuming production.

Philadelphia

Eastern steelmaking operations have advanced another point to 12 or 13 per cent, with a leading producer now at the highest point this year. Indications are these operations will be sustained over the current week.

Cleveland

Steel ingot production here for the week ended April 15 was at 32 per cent, compared with the 33 per cent average for the preceding week. One company which lighted an additional open hearth subsequently withdrew another. Corrigan, McKinney Steel Co. and American Steel & Wire Co. each has three units active; Otis Steel Co., five. Stocks have been drawn upon more heavily, and an increase in output is anticipated this week, though schedules are not definite.

Pittsburgh

Steel ingot capacity advanced four points last week to 18 per cent. This week the advance will be two points to 20 per cent. This is caused by rolling of orders received in increasing volume two weeks ago.

The open-hearth-division of the local rail mill is resuming this week, and active open hearths in other divisions of the same producer showed a marked step-up last week. Steel production of independents reversed a somewhat usual condition and both last week and this week are lagging a point or two behind the operating rate of the leading interest.

Active blast furnaces still number 8 out of 53, four being Corporation stacks and four being operated by three of the independent producers.

Birmingham, Ala.

Steelmaking, the past few weeks down to 12½ per cent, will be stepped up to 20 per cent this week as the rail mill of the Tennessee Coal, Iron & Railroad Co. begins a week's run on a small order for rails.

Buffalo

Last week saw an unexpected rise of five points in district open-hearth operations, with seven units active, representing 19 per cent of capacity. This week the number may be from five to seven, with the rate 14 to 19, depending on rush orders received over the weekend. A flood of these early last week caused the unexpected spurt in production.

Youngstown, O.

Operations gained two points last week to 19 per cent and were expected to start this week at 20. At least 24 of 83 open-hearth furnaces and two out of four bessemer vessels will be operating this week. Tin plate output here is above 50 per cent, a peak for 1933.

Detroit

On the basis of open hearths, steel production in this district is 38 per cent. The Great Lakes division of the National Steel Corp. is operating all of its open hearths. Ford Motor Co. is more active in its finishing department; its steelworks is idle.

Operating Rate of the Steel Industry, by Weeks

All figures except the monthly open-hearth and bessemer ingot totals of American Iron and Steel institute are percentages. Estimates are based upon weekly reports from the Pittsburgh, Chicago, Youngstown, eastern Pennsylvania, Cleveland, Birmingham, Ala., and Buffalo districts, which are weighted. Weeks end Saturday.

1932	1st Week	2nd Week	3rd Week	4th Week	5th Week	Steel's Average	Institute's Monthly Total tons	Institute's Monthly Average
Jan.....	22	25	26	27	28.5	25.7	1,454,309	25.86
Feb.....	28.5	27	25	25	....	26.4	1,450,648	26.83
March....	25	25.5	24.5	23	....	24.5	1,403,723	24.04
April....	23	22	22	23	24	22.8	1,233,603	21.94
May.....	24	24	25.5	23	....	24.1	1,101,994	19.60
June.....	21	17	17	17	....	18.0	893,899	15.90
July.....	14.5	12	15.5	16.5	16.5	15.0	790,055	14.61
Aug.....	14.5	14.5	15.5	14.5	....	14.7	829,236	14.20
Sept.....	13.5	15.5	15	17	....	15.3	971,365	17.28
Oct.....	18	19	19.5	19.5	19.5	19.1	1,064,598	18.93
Nov.....	21	21	19	17.5	....	19.6	1,010,894	17.98
Dec.....	16	15	14	12	13	14.0	843,244	15.00
1933								
Jan.....	15.5	17	18	19	....	17.4	1,009,483	17 84
Feb.....	19	19	19	17	....	18.5	1,066,339	20.41
March....	15	13.5	15	14	15.5*	14.6	885,913	15.08
April.....	17.5	20.5	..	..	....	....	.....	.....

*Week ended April 1

Ore Producers Appeal to Public in Drive To Cut Taxes

LAKE SUPERIOR iron mine operators have renewed their drive for lower taxes, this time appealing directly to the public through the medium of advertisements in Minnesota and Michigan newspapers.

Last year, when arguments were addressed mainly to tax officials, operators obtained little relief in Michigan and practically none in Minnesota. The average tax per ton of ore shipped from the Lake Superior district was more than double the market price, delivered to lower lake ports.

Over a long period the two states gradually piled up ore taxes, finally amassing a load that could be endured only when production was at the peak. The charge of "socialism" was laughed at. Since demand has shrunk to a small fraction of its former size the operators find it impossible to carry on. At last there is no alternative, they contend; it is either a drastic cut in taxes, or stagnation, forefeitures and bankruptcy.

Co-operative Action Taken

For fear that the legislatures and tax commissions cannnot be made to understand the real condition of the industry, or to give it the consideration it merits, concerted action has been taken by the 16 leading mine operating companies. Newspaper "broadsides" are being aimed at the public, in the hope that the public will demand action by their officials.

The announcement by some companies that they will suspend all operations at underground mines on or before May 1 is not a coercive measure. They are simply doing what they did last year, discontinuing underground operations in the summer and resuming at open pits. Production will be held down so far as consistent with the general policy of providing employes with some work. There is no threat of reprisals.

However, the companies point out in their advertisements that stocks at mines, ports and furnaces are 47,000,000 tons—equivalent to six years' requirements at the present rate of consumption. What would happen, they demand to know, if every merchant on the iron ranges had six years' supply of goods on hand?

In the series of advertisements in Minnesota newspapers the mining companies explain in the simplest terms how the entire iron and steel industry has suffered from a lack of business, this resulting in the smallest shipments of iron ore in 40 years.

"In 1932 the steel manufacturing companies lost $150,000,000, a loss equal to more than one-third the assessed valuation of all the mines in Minnesota," one advertisement states. "Such losses cannot be long endured. Under these adverse conditions, in 1932 (when shipments were 2,287,000 tons) the mining companies paid $18,650,166 in taxes in Minnesota."

In another Minnesota advertisement the operators say:

"Notwithstanding heavy investments in large stockpiles for which there is no market, mining operations have been carried on for more than two years, not to supply demands for ore, but to provide work for employes. . . . In the face of no business, every possible effort has been and is being made by the mining companies to assure their employes food, heat and shelter. . . . Cash resources are being exhausted."

This advertisement names 17 mines, collectively "containing in excess of 20,000,000 tons of ore," on which leases have been surrendered. "Further cancellations are now being considered."

"When leases are surrendered," the advertisement points out, "it means the loss of money invested in improvements and development, For most fee owners, into whose hands the properties are returned, it means bankruptcy or the surrender of the properties to the state for taxes. In short, the mine operators lose their investment, the fee owners lose their properties; state, county and local communities lose their taxes; and employes lose their jobs.

"High taxes have forced hard-driven mine operators to abandon unwillingly a logical, intelligent mining policy, in order to meet the demands of state and local governments for taxes."

Advertisements published in the Michigan newspapers show that per capita taxes in the four mining counties in that state range from $38.29 to $83.60, while in the other 12 "non-iron mining communities" the average is $25.98.

Costs and Royalties Down

Fee owners in Michigan are said to have adjusted royalty agreements "to a large extent," and operating costs have been reduced by rigid economies. But taxes have not been reduced in proportion, and "taxes are the key to what the companies are going to be able to do in the immediate future."

"For two years Michigan iron mine operators have been taking it two ways. They have paid taxes almost on the basis of 1929 operations and in the meantime have drawn on their reserves to provide employment of essentially relief character. Not a ton of Michigan ore mined in the

If Every Merchant on the Range Had Six Years' Supply of Goods on Hand!!!

WHAT CHANCE would the manufacturer who supplied him have to continue doing business?

The steel industry now has on hand at lower lake ports, furnace yards and mines, 47,000,000 tons of Lake Superior iron ore.

	Tons
Docks and Furnace Yards	30,000,000
Stock Piles at Mines	17,000,000
Total	47,000,000

Last month the steel makers used 660,000 tons of ore. At this rate six years' supply of iron ore is above ground and available without further mining.

DECLINE IN THE STEEL INDUSTRY

Of all the basic industries in the United States, steel is the hardest hit. This past year it has operated at less than 20% of capacity. The following figures tell the story.

Year	Steel Produced-Tons
1929	54,312,279
1930	39,286,287
1931	25,192,715
1932	13,095,727

RESULTING DECLINE IN IRON ORE MINING

Iron mining followed the decline of steel production as the figures below show:

Year	Iron Ore Shipped from Minnesota-Tons
1929	45,760,858
1930	34,517,748
1931	17,445,003
*1932	2,287,000*

* The Smallest Shipment in 40 Years.

WHEN WILL IRON ORE MINING REVIVE?

This depends on the revival of the steel industry.

Here are the steel industry's largest customers in the order of their importance.

Automobile Industry.
Building Trades.
Railroads.
General Manufacturing and Farming.

The automobile manufacturers are struggling to keep their heads above water.
The cities are all overbuilt.
The railroads are in financial difficulties because of lack of business.
General manufacturing and farming are at an extremely low ebb.

In 1932 the steel manufacturing companies lost $150,000,000, a loss equal to more than one-third the assessed valuation of all the mines in Minnesota. Such losses cannot be long endured.

MINNESOTA TAXES

Under these adverse conditions in 1932 the mining companies paid $18,650,166 in taxes in Minnesota.

Arthur Iron Mining Co.
Cleveland-Cliffs Iron Co.
Coates & Tweed
Corrigan McKinney Steel Co.
The M. A. Hanna Co.
Inland Steel Co.
Interstate Iron Co.
Mace Iron Mining Co.
Northern Pacific Railway Co.
Oglebay, Norton & Co.
Oliver Iron Mining Co.
Pickands, Mather & Co.
Republic Steel Corp.
Snyder Mining Co.
Wheeling Steel Corp.
Wisconsin Steel Co.

AN UNANSWERABLE ARGUMENT: Six years' iron ore supply now in stock, and demand at lowest point in 40 years, Lake Superior iron mine operators tell the public in this advertisement, one of a series in Minnesota and Michigan newspapers. Taxes, more than double the selling price of the ore mined in 1932, must come down if miners are to be given employment

winter of 1931-32 was needed or saleable. It is all piled on the surface.

"Further tax relief must come if the companies are to be able to do as well by the communities in which they operate as they have done in the past two years."

Reports to the iron ore companies indicate more serious attention now is being given to tax relief than at any prior time in recent years.

Skeptical of Ore Benefit In Roosevelt Southern Plan

President Roosevelt's plans for further development of Muscle Shoals, with an expenditure of $500,000,000 for dams and hydro-electric equipment, have revived discussions as to the amount of iron ore available for an iron and steel industry in Tennessee. This is one of a number of industries mentioned as likely to be fostered by the power development. One estimate accredited to "government engineers" gives the amount of high-grade ore in the state as 5,000,000,000 tons.

This tonnage is considerably more than twice that of the high-grade ore remaining in the Lake Superior district, and the estimate is considerably at variance with the generally accepted opinion regarding Tennessee's ore reserves.

"The ores in that state are low in iron and high in phosphorus," said a nationally-known geologist to STEEL. "Very little of it can be used without beneficiation. It is of secondary importance to that in the Alabama district, and no pig iron industry in Tennessee using iron ore from that state could get established or flourish in competition with Alabama, while extensive competition with lake ores in northern territory would be out of the question."

Europe Better as Entente Is Renewed, Britain Reorganizes

AT NO time since the war has the world been so upset, politically or economically, as during the first three months of this year. The financial crisis in the United States, war in the Far East, political upheaval in Germany, increasing distrust between the nations of the Continent—without mentioning devastating earthquakes in California and Japan; all these events have crowded into this quarter.

Yet, in many directions there are signs of more active business and increasing production. The signs are timid, but unmistakable. Is it that, unconsciously, people feel that "things have come to a head," and that, refusing to believe that we should eventually have to face complete destruction, they feel, on the contrary, we are returning to sound methods and common sense, and that "the tide is turning?"

This hopeful outlook on the European situation is by Vincent Delport, European manager of STEEL.

For a large part, psychological factors have been responsible for this world crisis. Are those factors now first in line to bring about a reversal to normal prosperity? If so, the retarded economic world conference will be coming at the right time, and a gradual improvement can at last be looked for.

It is necessary, however, that every responsible individual should make up his mind that the process of recovery will be a lengthy one, and that many major changes in the social and economic structure have come to stay.

In Great Britain, conditions have taken a favorable turn—at least on the surface—because unemployment figures are still abnormally high, and little, if any, relief can be expected from taxation.

But in some industries, and particularly in the automobile and iron and steel industries, the situation has improved. In the iron and steel industry, the slight progress registered in trade and production is accompanied by an important attempt to reorganize the whole industry.

In January and February, the British steelworks produced 927,100 tons of steel ingots and castings, against 910,300 tons in the first two months of 1932. Pig iron output was about 96,000 tons less in January and February of this year, but the interesting feature is that, both as regards steel and pig iron, the figures for these two months were well above the average of the second half of 1932. Furthermore, additional furnaces were blown in or relighted during March.

Duties Restrict Imports

Of greater interest still are the import and export figures. In January and February, imports of iron and steel were only 147,439 tons, compared with 419,454 tons in the corresponding months of 1932, a decrease of 65 per cent. These figures show the effect of the import duties.

It is true that during the same period, exports dropped from 307,086 tons to 284,325 tons, but here the reduction is of much smaller proportion, and the balance of trade has once more become favorable to Great Britain.

The scheme of reorganization that has been put before the import duties advisory committee has not yet been disclosed. According to present indications, the whole industry, including the rerollers, will be under control. Individual firms will preserve their identity, but arrangements will be made to concentrate the manufacture of the various products in those works that are best placed to produce economically and efficiently. While details of the

STEEL A GUARDIAN OF ANTIQUITY: This steel shelter in the Casa Grande national park, near Coolidge, Ariz., protects a 1000-year-old Indian adobe ruin, oldest of its kind and unusual because poured instead of constructed of bricks. Photo courtesy of national park service, Washington

scheme have not as yet been made public, as it is still being considered by the committee, it is possible to foresee that it will be on the following general lines:

It will be attempted to form producers into a national organization headed by a board that will operate in an advisory capacity, with certain powers, and which will represent the industry in negotiations of a national and international character. Regional committees would be formed in four regions: Scotland, the North-Eastern district, the Midlands, and South Wales. These regional committees would work under the direct supervision of the central board.

In each geographical region it will be endeavored to organize the industry in order that certain classes of products shall be manufactured in those works that are best fitted for the purpose; this would be arrived at by amalgamations or agreements between producers. Some steps already have been taken in this direction.

Group Together by Products

It also is believed that the industry as a whole will be divided into a number of associations, each one dealing with one class of products, similar in some respects to the comptoirs existing in France and Germany. In each association, output and sales would be divided among the member-firms, and minimum prices would be fixed. To a large extent, these associations would be autonomous, except as regards relations between themselves or with foreign associations, these relations being controlled by the central board.

Should the import duties advisory committee be satisfied that this scheme would definitely re-establish the industry on a sound basis, it is probable that the tariff protection now accorded to iron and steel would be guaranteed for a period of time. Eventually, the national organization might negotiate with the Continental producers and become a party to the entente.

We already announced early in February that the Continental Steel Entente had been renewed in principle for 5 years, with the proviso that the steel export trade would be organized internationally by the setting-up of a number of comptoirs or syndicates which would fix export quotas for each member-country and fix minimum prices. These international selling syndicates were to be agreed upon, at least in principle, by April 1. Other details relative to the steel entente itself were also to be settled.

On March 30 and 31, representatives of the steel industry of Bel-

(*Please turn to Page* 16)

Business News Of Washington

PRESIDENT ROOSEVELT has expressed through Secretary of Labor Perkins his approval of the purposes and principle of the 30-hour work week, but demands further elasticity of the limitation clauses of both the Black and the Connery bills. For one thing, the President is opposed to the embargo clause which would prohibit entry of goods from countries where the work week is longer than 30 hours, but on this point there will be strong disagreement in the house.

Such comment as comes from industry is critical, but there seems to be an underlying feeling that efforts to spread work, with which industry is sympathetic, will not prove as dangerous as the original Black bill threatened. For one thing, the Black bill is believed to be unconstitutional.

Typical of protest is the following from Homer D. Williams, president of the Pittsburgh Steel Co.:

"Manufacture of steel, particularly blast furnaces, is a continuous operation, working three shifts of 8 hours each per day, 5 days per week. would so split up working hours that total number of men would get less earnings, and unless rate of pay is reduced would add at least 25 per cent to labor cost and make it easier for foreign competitors to ship goods into the United States.

"To meet foreign competition would require either higher tariff or reduction of earnings nearly equal to that of Europe. This surplus of labor will only continue until this depression is over and then there will be in all probability a shortage of labor. We must strenuously object to this bill."

□ □ □

All of the foreign reports asked for by the custom bureau in connection with complaints filed with the bureau by the American Iron and Steel institute relative to alleged dumping of iron and steel products on the United States market have now been received except the French report, it is stated.

As already indicated in STEEL, these reports do not show dumping. No hearings will be held before a decision is reached unless specific request is made for one. To this time no such request has been received.

□ □ □

Increasingly it is seen that the tariff will figure prominently in the forthcoming economic discussions which President Roosevelt and Secretary of State Hull will hold with representatives of leading nations. Undoubtedly, however, the tendency will be toward a lowering of barriers as an inducement for foreign countries to increase their trade with the United States, and hence improve their opportunities for paying.

Secretary Hull is adamant in his stand that the country's new tariff policy will not destroy sound industries, but place them on a more profitable basis. Secretary of Commerce Roper has stated that American tariffs are "unreasonable and extreme" and that "any sincere attempt to restore the movement of goods between nations must involve a lowering of existing trade barriers."

□ □ □

Interstate commerce commission will begin April 24 to hold hearings in connection with docket No. 26,000, which involves reductions in freight rates on all basic commodities. The commission must be notified by April 20 of parties desiring to offer evidence. Relations between particular commodities or between particular points under existing rates are not in issue.

Bethlehem Officials Are Sued on 1917-30 Bonuses

Charles M. Schwab, chairman, and directors of the Bethlehem Steel Corp. are asked to repay alleged excess bonuses received by officers between 1917 and 1930 in proceedings instigated in the chancery court in Trenton, N. J., last week, by the Standard Investment Co., holder of 150 shares of preferred stock.

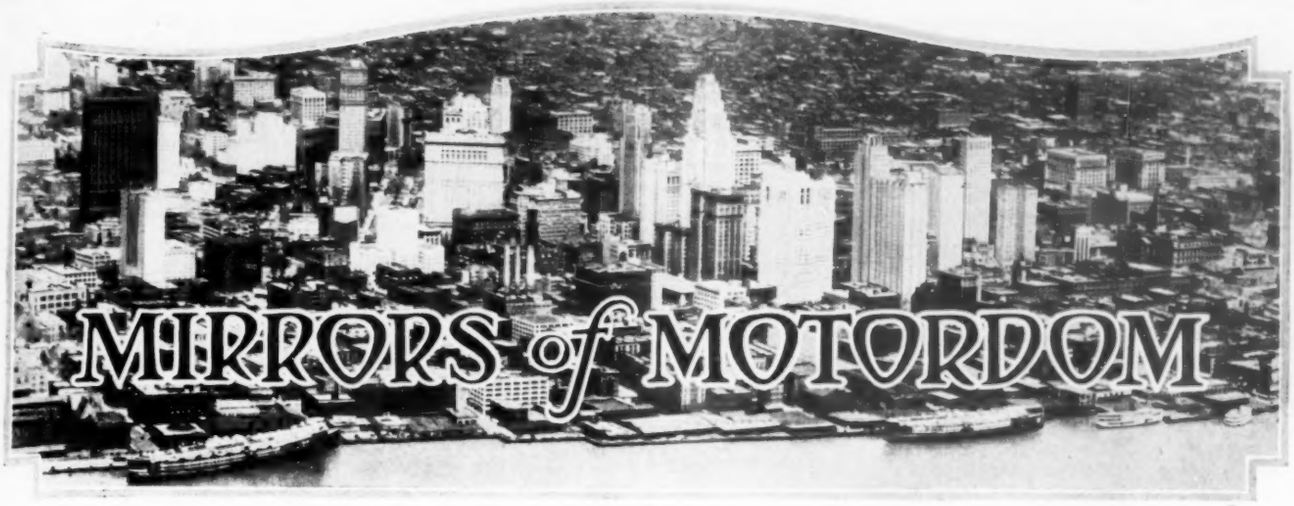
The complainant alleged that the Bethlehem officials were permitted to receive bonuses of 8 per cent of net earnings, computed after allowance for depreciation, but had received funds in excess of that amount. The exact amount was not determined and the corporation asked for an accounting.

Steel Bookings Off Less Than 1 Per Cent in March

Unfilled tonnage of the United States Steel Corp., March 31, totaled 1,841,002 tons, a decline of 13,198 tons from the 1,854,200 tons on books Feb. 28. This is a shrinkage of 0.71 per cent for the month. As of March 31, 1932, unfilled tonnage was 2,472,413 tons, a decline from February of 73,216 tons or 2.87 per cent.

To Consider Contracts

Contract terms for the ensuing year with sheet and tin plate mills and bar iron mills will be discussed April 18 at the fifty-eighth annual convention of the Amalgamated Association of Iron, Steel and Tin Workers in Pittsburgh.



DETROIT

WHEN Henry Ford brings out his new models, which he states will be soon, the issue will be joined in the extremely low price field. A battle royal seems assured, as the new line undoubtedly will be his bid to retain or regain supremacy—according to the viewpoint—in the market in which he made his fortune and reputation.

Already there is considerable congestion in the lower brackets, as indicated by the following comparison of cylinders, wheelbases and f.o.b. quotations on 2-door sedans or their equivalent:

Austin four, 75 inches, $315.
Continental four, 101½ inches, $380.
Willys four, 100 inches, $445.
Ford four, 112 inches, $450.
Chevrolet standard six, 107 inches, $455.
Ford eight, 112 inches, $500.
Terraplane six, 106 inches, $505.
Plymouth standard six, 107 inches, $505.
Continental six, 107 inches, $510.
Chevrolet master six, 110 inches, $515.
Plymouth deluxe six, 112 inches, $535.
Terraplane special six, 106 inches, $545.

The new Ford line will be inserted between the Continental four and the Willys four, but Continental not yet having achieved volume sales and Willys being out of production since receivers were installed, the nearest competition is the present Ford four and the new Chevrolet standard six.

At this time the prospective buyer can pay $450 and get a Ford four on a 112-inch chassis, or for $5 more he can obtain two additional cylinders at a sacrifice of 5 inches in wheelbase. The leader of the new Ford line is expected to be an eight, with a wheelbase between 100 and 105 inches, at about $400 or even less.

Detroit at first was surprised that Chevrolet priced its standard six 2-door sedan as high as $455, but increasingly regards it as a smart move. It believes that Chevrolet has reserved some of its price fire until it sees the new Ford, and any onus for upsetting the market will accrue to Ford and not to General Motors.

Whether the disturbance occasioned by the new Fords reaches up into the Terraplane and Plymouth range depends, of course, upon the depth to which Ford goes. It may be that automobile prices will be declining at a time when commodity prices are rising. This issue is squarely up to Mr. Ford.

The extent to which advancing prices on materials may restrain the Ford enthusiasm for a low base on the new models is problematical. It is loosely stated in Detroit that Ford requires a daily schedule of 5000 units, or about 100,000 a month, to make a profit. It is also believed that the net loss of the Ford company since Model T was dropped in 1927 is about $122,000,000.

Ford Sets Price First

The Ford setup that has netted almost a billion dollars in 25 years is high volume sustained over a long period with few model changes. It does not appear that any manufacturer will ever again operate five to six years with practically no mechanical changes or restyling; nor, in view of the increased competition, is any manufacturer ever likely again to get up to 9000 units a day.

But Ford may logically be expected to reach out for as large a proportion of low-price business as possible, and to fix the price of the new line at a level calculated to develop this volume. The Ford doctrine in the past has been to determine price, then adjust manufacturing costs, expecting material and parts makers to co-operate and absorb any reductions out of management rather than labor costs.

The Ford policy on the price it will pay for steel and other materials may be decisive in these markets. Ford is not alone in bearing down on quotations, but some manufacturers recently have eased their pressure. Chrysler, for one, has been willing to cover for the remainder of the year at present levels. Another large interest has refrained from taking advantage of openings for concessions.

But in the final analysis, material and labor are the least of automobile manufacturing charges. Obviously, cost sheets are not made public, but the following is a fair breakdown for cars with an f.o.b. price of $500 to $600.

The platform cost, which includes materials, parts and labor for the completed car at the end of the assembly line is $105 to $125; in the case of a popular make, it is said to be $109 this year.

The dealer's profit and salesman's commission absorb $150. For advertising, the allotment per car is $25 to $30. One large corporation has appropriated $30 per car this season for radio, newspaper and magazine advertising, dealer helps and sales promotion. This manufacturer grants dealers local advertising spent as the dealers direct, at the rate of $10 for each car sold. A truck manufacturer debits its dealers $10 for advertising for each small truck sold, and $20 for each large one.

The difference, which is almost half the f.o.b. price, is overhead, zone supervision, profit and other items. With production drastically curtailed, overhead per car manufactured has become an increasingly burdensome item.

General Motors' report for 1932, for example, shows $592,694,766 set up for real estate, plant and equipment, which averages almost $1300 on each of the 472,859 cars it sold to dealers last year. Attacking this problem vigorously, in 1932 it charged $37,173,647 against earnings for depreciation, and made a net decrease of $34,354,371 in its plant, real estate and equipment account.

Difficult as the automobile industry's position is, it is immeasurably better than that of its chief supply

industry—steel. General Motors, largest automobile manufacturer, reported net profit of $164,979 for 1932, or 35 cents on each of the 472,859 cars it sold. United States Steel, largest steel manufacturer, showed a net deficit of $71,175,704 or a loss of $17.91 on each of the 3,974,062 tons of finished steel which it marketed.

Once more the estimate of April production of motor vehicles must be revised upward, the present indication being that the figure will exceed the 130,114 of January, and be the largest since the 183,106 of last June. Ford reports heavy demand for the eight, and is assembling over 2000 a day, with April output perhaps nearer 50,000 than 40,000 units. Chevrolet continues on a basis of about 50,000 units this month with retail sales expanding. Other approximate schedules for April now are Olds 3000, Buick 2500 to 3000, Pontiac 6500, Graham 1200, Hudson-Essex 5000. Hupp is operating 5 days a week. Ford, Chevrolet and Chrysler are closing on May steel requirements.

Iron, Steel Division Offers Valuable Foreign Trade Data

PROMPT and reliable statistical information on the export and import trade in iron and steel products? And available at a nominal cost? Yes, just that, and what export manager has not wished for or does not now need such a service, or what sales manager would not give something to know accurately the quantity of foreign steel which is competing with his own line?

It is now nearly 12 years since a unit was created in the United States bureau of foreign and domestic commerce to assist the domestic iron and steel industry in increasing the volume of its export business and to provide pertinent import information.

Many of STEEL's readers already are familiar with the work of this unit—designated the iron and steel division—but it is improbable that as many know of the extensive statistical service it offers.

Within a day or two of the first of each month each subscriber to these statistical services receives a new issue of the appropriate statement—the data contained describing the foreign trade in that subscriber's line of the second preceding month—that is, for February if the delivery in question occurred early in April.

The accompanying summary of export statistical services of the iron and steel division of the bureau of foreign and domestic commerce, department of commerce, Washington, is by J. Joseph W. Palmer, of that division.

Complete Data Supplied

The sheets he would receive that day would tell him to the ton just how much of each product went to each of the 125 or more markets for which separate record is kept, or, if the data subscribed to covered the import trade, it would reveal the sources from which each product in the import trade was had and in the instance of one statement would even indicate the customs district through which the material officially entered this country.

There is, for example, Statement No. 3200 designated as "U. S. Exports of Iron Ore, Pig Iron and Specified Iron and Steel Products." In it the export trade in iron ore, pig iron, ferromanganese and spiegeleisen, iron and steel scrap, ingots, rough castings, car wheels and axles, horseshoes, forgings, and drums and containers is detailed—the information being compactly presented on an 8 x 10½-inch sheet.

Then there is Statement No. 3201 listing "U. S. Exports of Iron and Steel Bars, Shapes, Plates, and Railway Track Material"—heavy iron and steel as it were—while for the somewhat lighter products there is Statement No. 3202 in which "U. S. Exports of Iron and Steel Sheets, Wire and Nails" are analyzed in detail.

And finally there is export Statement No. 3203, "U. S. Exports of Iron and Steel Tubular Products" for the pipe maker and dealer.

The import field is served by two statistical statements—No. 3251 listing separately the imports of all the range of products from iron ore through bars, sheets, shapes, rails, wire, etc., by countries of origin, while No. 3252 not only duplicates this same lineup of commodities but also breaks down the trade with each country so as to reveal the customs districts through which the steel in question actually entered this country.

The first of these is for the busy executive with only just time enough to skim over the report and quickly pick out the more salient features. The second is for the more analytically inclined.

The charge for a year's service—12 monthly reports—is in each instance the nominal sum of $1 with the exception of Statement No. 3252, for which a charge of $1.50 per year is made. All the statements, for convenience, have been placed on regular letter-size sheets.

Sample copies of any of them are available to interested parties without cost and subscriptions or requests for these samples should be sent to the iron and steel division, bureau of foreign and domestic commerce, Washington.

Now these six statements by no means exhaust the statistical services of the Iron and Steel Division—the interests of the firearms, wood screw, and hardware manufacturers and dealers are served through the medium of the following statements:

No. 3204—U. S. Exports of Firearms and Munitions of War.
No. 3205—U. S. Exports and Imports of Wood Screws.
No. 3206—U. S. Exports of Iron and Steel Products to Japan.
No. 3207—U. S. Exports of Builders' and Other Hardware.
No. 3208—U. S. Exports and Imports of Cutlery.
No. 3209—U. S. Exports of Hand Tools.
No. 3210—U. S. Exports and Imports of Abrasives.
No. 3211—U. S. Exports of Cooking and Heating Apparatus.
No. 3212—U. S. Exports of Sanitary Ware.
No. 3213—U. S. Exports of Lamps and Lanterns.
No. 3214—U. S. Exports of Specified Items of Hardware and Allied Products.

Each of these is offered at a subscription of $1 per year with the exception of Statement No. 3209 which, because of the number of countries receiving exports of hand tools, is of extra size and therefore sells for $1.50.

Two Bulletins Published

Two other services of the iron and steel division will probably interest the readers of STEEL. These are the division's two bulletin services—the *Iron and Steel Fortnightly*, issued every second Wednesday and with supplements analyzing the month's export and import trade in iron and steel issued each month, and the *Foreign Hardware Trade Bulletin*, a weekly release.

Each of these bulletins averages eight mimeographed pages in length and contains a wide range of items on subjects of interest to manufacturers and/or exporters of their appropriate lines of products. Subscription to either is $1 per year.

Industrial Men in the Day's News

Ely C. Hutchinson, President, Edge Moor Iron Co.

EXECUTIVE training in the power field is the principal background he brings to his new post.

HE also has had journalistic experience, and has been active in the American Society of Mechanical Engineers.

OF the United States committee of the International Electro-Technical committee he is chairman.

ELY C. HUTCHINSON, newly-elected president of the Edge Moor Iron Co., Edge Moor, Del., brings to his position many years of executive training, with special experience in the power field. As noted in the Feb. 20 issue of STEEL, he succeeds William F. Sellers, who retired because of impaired health.

Starting his industrial career in San Francisco, he was first connected with the former Union Iron Works, shipbuilders, now a subsidiary of the Bethlehem Steel Corp. Later he became affiliated with the Pelton Water Wheel Co., New York and San Francisco, now a subsidiary of the Baldwin Southwark Co., Eddystone, Pa. He was associated with this company for 20 years, resigning as president and general manager. From 1929 to 1933 inclusive, Mr. Hutchinson was editor-in-chief of *Power*.

Mr. Hutchinson is a member of the American Society of Mechanical Engineers, a past manager of the society, and active on a number of committees of the society. He is also a member of the Engineers' Club of New York and San Francisco; life member of the Sons of the American Revolution; member of the American Committee of World Power conference, with headquarters in New York; and director of the Secretariat of the United States national committee of the International Electro-Technical committee, which is engaged in the establishment of international standards in the measurement of practices in the power field. Mr. Hutchinson has charge of the hydraulic power branch of the committee.

NEIL C. HURLEY has been elected president of Independent Pneumatic Tool Co., Chicago, succeeding Ralph S. Cooper, who has been made vice president in charge of eastern operations, with headquarters in New York.

John A. McCormick has been re-elected chairman of the board, with Leonard S. Florsheim named chairman of the executive committee.

Frank S. Hamerly has been elected vice president in charge of the factory at Aurora, Ill., and Gordon H. McCrae, London, England, vice president in charge of foreign business.

F. W. Buchanan was named secretary, and Edward G. Gustafson treasurer. Mr. Hurley, new president, is a brother of Edward N. Hurley.

□ □ □

Louis C. Bihler, for 38 years identified with the traffic and transportation departments of the Carnegie Steel Co., Pittsburgh, will retire April 30. Mr. Bihler became identified with the Carnegie company in 1895 as assistant to the general freight agent, later becoming assistant traffic manager. In 1904 he succeeded George E. McCague as traffic manager.

From 1907 until 1929 he was eastern traffic manager of the Universal Portland Cement Co. and from May, 1928, until September 30, 1932, he was assistant to the president and general traffic manager of the Carnegie Steel Co. At the latter date, he retired from active traffic work and was assigned to special duties. Mr. Bihler was active in the Traffic club, the pioneer organization of its kind, and served as its president in 1906, also as chairman of the board and as a member of the board of governors for six years. During Mr. Bihler's career, the 65-foot 70-ton gondola car was developed, an innovation in which he was closely interested.

□ □ □

Frank W. Fry, formerly in charge of the New York office of the E. B. Leaf Co., until its retirement from the scrap business, and later in the New York office of the former Hausman & Wimmer Co., has become associated with Grace Iron & Steel Co., 815 Broadway, Brooklyn, N. Y.

□ □ □

D. S. Gaston, formerly manager of jobber sales of Follansbee Bros. Co. Inc., Pittsburgh, is now manager of mill sales of tin plate products for the company.

□ □ □

Lloyd D. Brady, for the past seven years at the Rouge plant of the Ford Motor Co., Detroit, sailed recently to become foundry consultant to F-I-A-T, at Torino, Italy. After completing his commission with F-I-A-T he will

visit the principal foundry centers of Europe before returning to the United States.

□ □ □

Hugh Morrow has been re-elected president of the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.

□ □ □

W. B. Farnsworth, chief clerk of the Carnegie Steel Co., Clairton, Pa., works, is retiring May 1 after service of 47 years.

□ □ □

B. B. Weinberg, vice president and general sales manager at Pittsburgh for the Heppenstall Co., Pittsburgh, has been transferred to the Newark, N. J., division of the company.

□ □ □

Henry S. Hoyt, of Edgar Allen Steel Co. and A. Milne & Co., New York, returned recently from Europe where he visited steel and iron mills at Sheffield, Eng., and in Sweden, Germany and Austria.

□ □ □

Adam M. Steever has become vice president in charge of technical operations of the Lindberg Steel Treating Co., Chicago. Mr. Steever formerly was with the Buick and Chevrolet divisions of General Motors Corp., the Ingalls-Shepard division of Wyman-Gordon Co., Harvey, Ill., and the Great Lakes Forge Co., Chicago.

□ □ □

Walter F. Brown, Toledo, O., former postmaster-general, has been elected president of the Cleveland Automatic Machine Co., Cleveland, succeeding the late A. F. Garford, of Elyria, O.

S. D. Wright, president, Atlas Car & Mfg. Co., Clveland, has been elected a director to succeed Mr. Garford.

□ □ □

Arthur F. Frazee, formerly secretary and advertising manager of the Rudy Furnace Co., Dowagiac, Mich., has been elected vice president and general manager. He succeeds the late Charles J. Biek as general manager.

Leo J. Biek was made secretary and assistant sales manager, and Sidney B. Tremble treasurer and advertising manager. Messrs. Biek and Tremble were also elected directors.

□ □ □

Merrill G. Baker, president, Union Steel Casting Co., Pittsburgh, and B. F. Mercer, vice president and general superintendent, are no longer identified with the company, which is a subsidiary of Blaw-Knox Co., Blawnox, Pa.

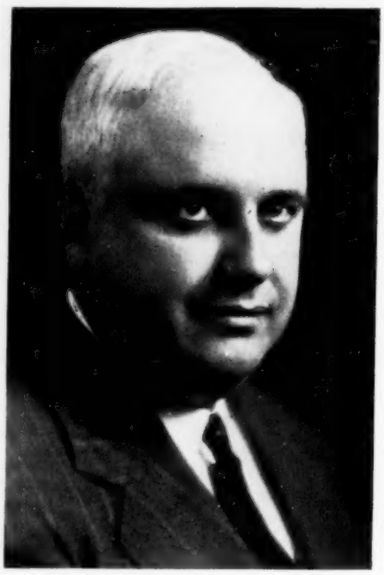
Frank Cordes has been appointed president to succeed Mr. Baker. No successor to Mr. Mercer has been named.

J. R. Dunsford remains as chairman of the board, the position which he has held since Mr. Baker entered the company as president last year. Prior, Mr. Dunsford was president.

New Luria Bros. Office at Chicago

LURIA BROS. & CO. INC., dealers and brokers in iron and steel scrap, Reading, Pa., open a branch office in Chicago, May 1, in charge of W. E. Richey, district manager, who will have headquarters in the Straus building, 310 South Michigan avenue. The company also will operate a yard for the preparation and storage of all grades of iron and steel scrap, in the Chicago district.

Mr. Richey, who was for many years connected with the Pennsylvania railroad and has been associated with the Detroit office of the Luria company since it was opened more than three years ago, is also vice president of the Lake Ports Shipping & Navigation Co., Detroit and Chicago, which operates the self-unloading steamer HENRY CORT in the lake transportation of iron and steel.



W. E. Richey

This is the second expansion move of the Luria company in the Middle West in recent years. In September, 1929, it opened its Detroit office in the Book Tower in charge of C. H. R. MacKenzie, and shortly thereafter opened a yard in Ecorse, a suburb of Detroit. Prior to this, the Luria company had no office west of Pittsburgh. This second development in less than four years denotes the company's confidence in the Middle West market.

The Luria company was founded in 1889 and has headquarters in Reading. It also operates yards and offices in Lebanon, Pa., Pittsburgh and Detroit, offices in New York, Philadelphia and Boston and yards in Donaghmore and Coatesville, Pa.

Recently the Luria company has been doing a large export business in iron and steel scrap out of Atlantic ports, in addition to its domestic trade.

USSR Goal for Pig Iron in 1933 is 9,000,000 Tons

For 1933, industrial development of the USSR as developed at a recent plenary sitting of the central committee of the communist party includes the following:

"In ferrous metallurgy 15 blast furnaces are to be blown in as follows: In Magnitogorsk two, in Azovstal two, in Krivorog plant one, in Lipezk one, in the southern works five. Fifty one open-hearth furnaces, 15 electric furnaces, four blooming, 15 rolling mills and four pipe rolling mills are to be started. Owing to these new installations, the annual production of pig iron will rise to 9,000,000 tons, that of steel to 8,900,000 tons and that of rolled metal to 6,200,000 tons."

Europe Better as Steel Entente Is Renewed

(*Concluded from Page* 12)

gium, France, Germany, Luxemburg and the Saar met in Paris, and an agreement was arrived at on the text of the contract relating to the comptoirs for semifinished steel, structural steel, merchant bars, plates and medium-gage sheets (down to 2 millimeters). Rails, wire rod and wire products are already syndicated. A number of details still have to be worked out, including the export quotas of the member-countries.

As a result of this agreement it was announced that the steel entente is renewed for a period of 5 years; the rules and by-laws include certain clauses of cancellation or resignation, especially as regards an eventual change in the economic regime of the Saar territory.

Production quotas allotted to each member-country are now established; these vary in accordance with the aggregate volume of exports of the five members, based on annual figures. Only the penalties for exceeding the quota remain to be fixed. One important provision of the regulations is that each member-country undertakes to respect the home market of the other member-countries, subject to private arrangements authorized by the board of the entente.

The uncertainty of these entente and comptoir negotiations during the first three quarters impeded to some extent the improvement of the Continental iron and steel trade. Since

the beginning of the year, however, conditions have shown a better tendency. A considerable volume of business has been done with the Far East, output has gone up, and prices, although still low, are not subject to such violent fluctuations as in the past. In France, domestic trade is more active. The change in the German political outlook, if and when stabilized, should not be detrimental to industrial interests, and in that country also, domestic and export business have slightly improved. In Poland, a larger number of orders has been booked than recently, and in Italy there has also been a slight improvement.

The continent of Europe is still far from being prosperous, and signs of revival are only beginning to show, but given the successful and complete reorganization of the steel entente, and, in a wider sense, a settlement of the international problems which still impede world trade, there is no doubt that the ground is ready for a strong movement toward more normal conditions.

Here and There In Industry

DELAWARE STEEL SERVICE INC. has been formed at Philadelphia by G. F. Wilson, Gustaf Peterson and S. B. Mathews, until recently members of the Philadelphia district organization of the Ludlum Steel Co., Watervliet, N. Y. The new company will represent, among others, the Ludlum Steel Co. Complete lines of all principal Ludlum products will be carried, including tool and special alloy steels, stainless steel and Nitralloy.

□ □ □

City Machine & Tool Works interests, Dayton, O., have acquired a majority stock interest and control of the Sheffield Machine & Tool Co., also of Dayton, manufacturer of precision gages. C. H. Reynolds, Detroit, long identified with both companies, becomes president of the Sheffield company. O. M. Poock, president of the City Machine & Tool Works, becomes treasurer, and Louis Poock, general manager of the City company, becomes a vice president and general manager of the Sheffield company. No other changes in personnel have been made. Mr. Reynolds will retain his residence and office in Detroit.

□ □ □

General American Tank Car Corp., New York, has changed its name to the General American Transportation Corp. Stockholders at the annual meeting re-elected all directors. Net profit afor first quarter were reported at $250,000 or more.

Died:

LEE H. MILLER, chief engineer, American Institute of Steel Construction Inc., at Cleveland, April 9. Born at Aylmer, Ont., in 1877, he attended the public schools of Canada and was graduated in civil engineering from the University of Toronto. Before and during his academic training, he spent two years in foundry and machine shop practice.

After his graduation in 1900, he went to Pittsburgh where he became a structural steel draftsman, a year later going to Cleveland where he was associated with the Brown Hoisting Machinery Co., Wellman-Seaver

Lee H. Miller

Engineering Co. and McMyler Co. From 1908 to 1922 he was structural sales agent for the Bethlehem Steel Co. in Cleveland.

In the latter year he started the work of organizing the American Institute of Steel Construction, and was actively associated with the institute until his death. In 1923, the specifications of the institute were completed and Mr. Miller became chief engineer with offices at Cleveland. He was an authority on wind stresses, fireproofing and other technical problems in connection with the use of structural steel.

Said Charles F. Abbott, executive director of the institute:

"The structural steel industry loses a valuable monitor in Lee Miller. He carried the welfare of the industry close to his heart and numbered the rank and file of steel men and structural engineers among his friends. Lee Miller has done more than any man in the world to bring about co-ordination in this industry and largely from his efforts the public is today benefiting from the improved and high standards set up by the structural steel industry of the United States."

□ □ □

F. J. Pike, president, LaGrange Iron Works, LaGrange, Ga., April 5.

□ □ □

James W. Lawrence, 74, professor emeritus of mechanical engineering, Colorado Agricultural college, Ft. Collins, Colo., April 3.

□ □ □

Albert B. Neill, 86, former partner of Miller, Neill & Gardner, carwheel manufacturers, Buffalo, at Cambridge, Mass., recently.

□ □ □

John H. Victor Jr., 21, vice president, Victor Mfg. & Gasket Co., Chicago, and son of the president of that company, April 7, at Evanston, Ill.

□ □ □

William Francis Russell, 55, former comptroller, Bucyrus-Erie Co., South Milwaukee, Wis., and until recently managing director, Isaac G. Johnson & Sons Steel Co., Bronx, New York, April 12.

□ □ □

Thomas W. Evans, salesman and serviceman for the Shenango Penn Mold Co., Pittsburgh, at Pittsburgh, April 7. Mr. Evans at one time was assistant open-heath superintendent at Midland, Pa., for Pittsburgh Crucible Steel Co., Pittsburgh, and later was with the Vulcan Mold & Iron Co., Latrobe, Pa.

□ □ □

Charles T. Luntz, vice president, Luntz Iron & Steel Co., Canton, O., at Akron, O., April 11, as a result of injuries received in an automobile accident there April 9. He was 42, active in Canton civic affairs and had organized in 1916 the scrap business of Luntz Iron & Steel Co. with his brothers, Darwin S. and A. M. Luntz.

Drops Morris & Bailey

American Steel & Wire Co. has discontinued its Morris & Bailey division, Wilson Station, Pa. The division, which manufactured cold-rolled strip steel, was purchased from the Oliver Iron & Steel Corp., Pittsburgh, two years ago. Some of the personnel has been transferred to the American Steel & Wire Co.'s Cleveland division. At this time the division is not being dismantled.

Will Liquidate Nova Scotia

The Eastern Trust Co., Sydney, N. S., present joint receiver-manager of the Nova Scotia Steel & Coal Co. Ltd., and D. H. McDougall, former president of the Nova Scotia company, have been appointed joint liquidators for the Nova Scotia company under the Dominion winding-up act.

EDITORIAL

Take Out Dynamite, Retain Teeth in Black Bill!

INDUSTRY is reacting to the Black 30-hour-week bill with emotions ranging all the way from mild curiosity to horror and consternation. This wide diversity of opinion is not surprising to anyone who has studied the proposed legislation carefully. It has some merit in that it is based in part on laudatory motives, but at the same time some of its provisions introduce new questions of national policy that are alarming in their import.

In the form in which it passed the senate, the bill provides for prohibiting for a period of two years the interstate shipment of articles produced in the United States in industrial establishments in which any employe works more than six hours per day or more than five days per week. Railroads, newspaper and magazine publishers, agriculture and certain seasonal activities are exempted.

Sponsors of the bill look upon it as emergency legislation which would force the spreading of available jobs over a large number of workers. President Roosevelt and his advisers, Secretaries Perkins and Roper, favor the bill "in principle," but assert that it needs modification to make it "more workable." Apparently the changes desired by the administration involve provision for greater flexibility—such as, for instance, permissible exceptions to the 6-hour rule in the case of unusual situations arising from seasonal peak activities, certain continuous operations, etc.

Black and Connery Bills Differ Radically From Past Legislation on Working Hours

Obviously the Black bill (also the Connery bill of similar intent in the house) is unlike the legislation which was proposed at the time shorter working hours were being considered in past decades. Therefore some of the old arguments offered in protest to the 10-hour day and later the 8-hour day will have little bearing on the present proposals. The pending legislation should be appraised from the standpoint not only of its immediate and early effect on employment and recovery of business, but also of its possible continuing effects long after the present emergency has passed.

Industry should be the last to object to the bill on the ground of its work-spreading provisions. The steel industry has been doing a wonderfully good job in distributing its available man-hours to a large number of workers. It endorsed Mr. Teagle's voluntary spread-work plan, and the Black bill, in that respect, simply legalizes the Teagle proposal. Therefore, if the Black legislation were made sufficiently flexible to allow leeway for certain continuous operations, no one could object to it seriously on the basis of its spread-work features.

With or without such flexibility, the act would increase the cost of supervision. Many other costs also would be raised, just as they have always mounted when shorter hours have been adopted. But this in itself is not an insurmountable barrier; in fact at this stage of the depression many producers and manufacturers would welcome the advent of such legally increased expenses as a legitimate opportunity for raising selling prices which have been far too low. Furthermore, any influence the bill might exert in preventing the few industrial pirates from exploiting labor in order to undercut fair-minded bidders would be welcomed. In these statements we still are considering only the short-term aspects of the Black bill.

If Spreading Work Is Main Objective, Why Not Accomplish It Through Less Drastic Measures?

Against these possible benefits are a number of pertinent objections, some of which are being aired in congress and in the public press. Many competent authorities will agree with Speaker Rainey that there is "a lot of dynamite" in the bill. There is dynamite in the inequalities that would arise from its enactment. There is more dynamite in the implication, justified by the proposal, that the government desires to hold a whip over industry through the power it exerts over interstate commerce.

President Roosevelt is said to believe that the bill should be shaped to fulfill three objectives: (1) To spread employment over the largest number of individuals, (2) to prohibit unduly long working hours and (3) to equalize within each industry the amount of work available.

In view of the unknown potential dynamite in the Black bill, would it not be better to rewrite it so that it will fulfill the President's objectives without committing labor, industry and the public to the hidden dangers of unjustified interference in interstate commerce?

It would seem possible to put teeth into an intelligent spread-work plan and to prevent unduly long working hours without involving such drastic regulatory powers as are contemplated.

THE BUSINESS TREND

Industry Regains Ground It Lost During Bank Crisis

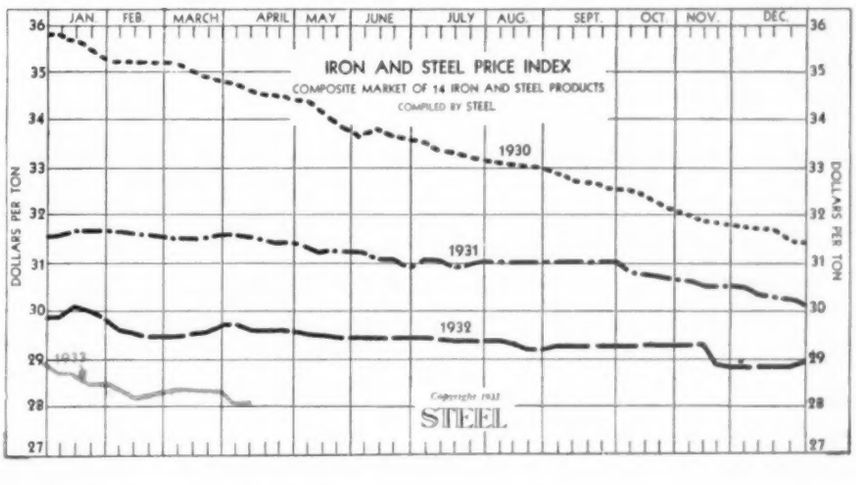
MIDWAY in April, industry finds more tangible evidence of improved conditions than at any time since the turn of the year. In the automobile industry production has been stepped up to the level which prevailed just before the Briggs strike interrupted the upward swing of output in the final week of January: Steelworks operations have climbed back to about where they were before the bank moratorium was declared. In several other major lines of industrial activity, the losses incurred during the four to six weeks following Feb. 14 have been erased.

The impetus for the present mild flurry in business came from several sources. Certainly the return of legal beer was a contributing factor, not only in orders for material and equipment but also in its psychological effect upon public and business sentiment. Another factor is the growing belief among consumers that inflation in some form is in the offing and that higher prices for many commodities will materialize soon. A third influence is the resumption of normal banking operations in all but a few industrial cities.

Action in regard to the railroad situation may be expected at an early date. If, as seems to be indicated by developments at Washington, drastic changes in the method of dealing with the roads are to be inaugurated, there is hope that the "buy nothing" policy will be modified soon. The difficult problem of placing the rail transportation system on an improved operating basis entails certain replacements and betterments, as well as co-ordination of existing properties. The result may be the early release of some business by the roads. However, the long-time effect may be a reduction in steel requirements, inasmuch under co-ordinated management and operation, fewer miles of track, fewer cars and locomotives, etc., would be required to handle the nation's shipments.

Seasonal Influences and Dynamic Action at Washington Brighten Business Outlook

The prospect for a continuation of the current modest improvement seems fairly bright. Seasonal influences should help somewhat. Activities in Washington, while experimental in the extreme and some of them radical, are for the most part constructive. Moreover, there is a good chance that many of the harmful provisions in certain pending legislation will be modified before enactment.

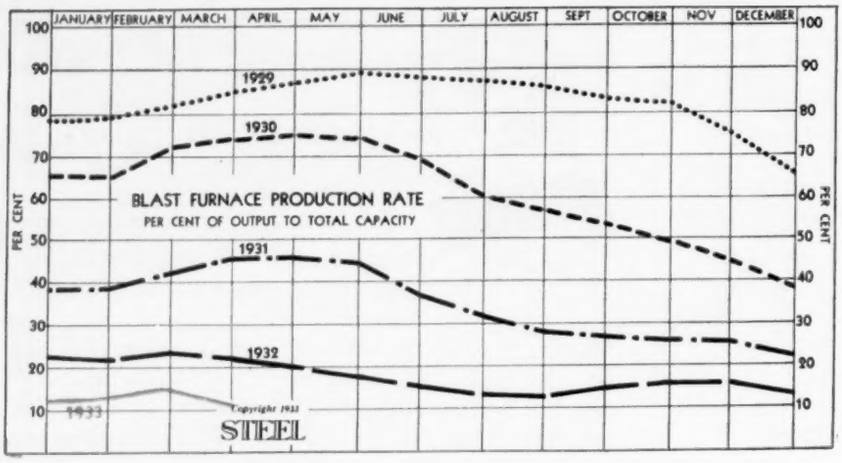


1933

April 8	$28.14
April 1	28.12
March 25	28.35
March 18	28.35
March 11	28.35
March 4	28.35

1932

April 9	$29.74
April 2	29.81
March 26	29.81
March 19	29.57
March 12	29.55
March 5	29.53



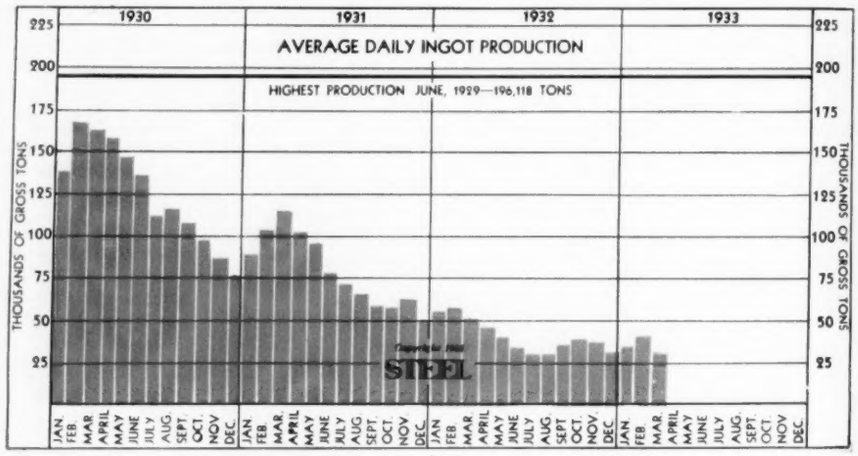
March, 1933 ..... 12.3
February, 1933 ..... 14.0
March, 1932 ..... 22.0

Blast Furnace Activity Slumps in March

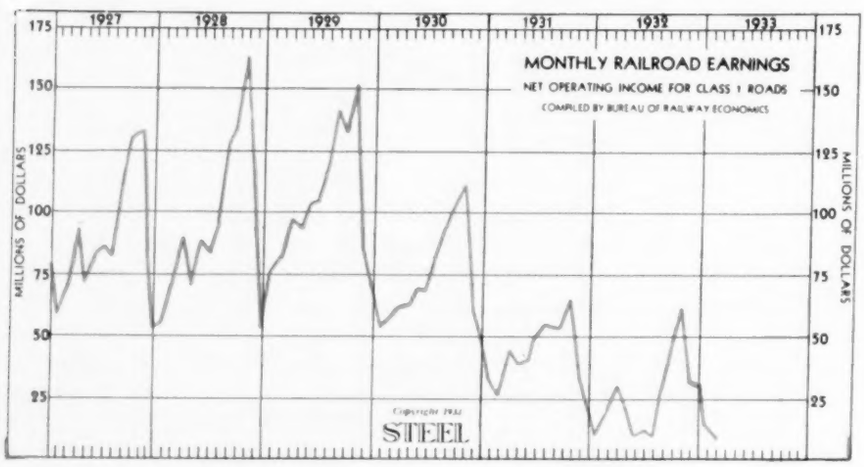
With the daily output of pig iron down 11.5 per cent in March, six blast furnaces were dropped from the active list. Relating production to capacity, operations in March were 12.3 per cent, against 14.0 per cent in February, and 22.0 per cent in March, 1932. The total of 38 blast furnaces active on March 31 was the lowest on record, the previous bottom being 41 last August. Furnaces active on Feb. 28 totaled 44 and 45 on Jan. 31.

March Ingot Output Holds Above August

The average daily production of steel ingots during March was 32,812 gross tons, which was at the operating rate of 15.08 per cent. Although this current output represents a drop of 11,619 tons from the previous month, it did not recede to the lows of last July, August and December. Total calculated output for the first quarter of this year was 2,961,735 gross tons compared with 4,308,680 tons for the same period in 1932.



March, 1933 32,812
February, 1933 44,431
March, 1932 51,990



February, 1933 ..... $ 9,854,882
January, 1933 13,265,721
February, 1932 21,655,333

Railway Earnings Continue At Low Ebb in February

Class 1 railroads of the United States for February had a net railway operating income of $9,854,882, which was at the annual rate of return of 0.61 per cent on their property investment. In February, 1932, net income totaled $21,655,333 or 1.35 per cent. According to statistics compiled by the Bureau of Railway Economics earnings for the two months ending Feb. 28 were $23,211,198 or 0.76 per cent on investment.

STABILIZING 18-8 STAINLESS STEEL BY ADDITION OF TITANIUM

BY E. C. BAIN, R. H. ABORN AND J. J. B. RUTHERFORD
United States Steel Corp.

Fig. 1—Stainless steel of the 18-8 chrome-nickel austenitic type is an electric furnace product. This induction unit, shown in operation, is of 4-ton capacity

ONE of the few shortcomings of the austenitic stainless steels of the 18-8 type, particularly in the product of early manufacture, has caused considerable anxiety. The metal, after exposure to moderately elevated temperature in the general vicinity of 1000 to 1500 degrees Fahr., has frequently been found to be subject to a very characteristic form of intergranular corrosion, even in environments which ordinarily have no effect upon the normal alloy.

Thus, metal near a weld sometimes literally disintegrated in use with solutions which did not attack the remainder of the article; or sheets of the alloy would suffer loss of strength during pickling after an improper heat treatment. Whenever metal was found to exist in the condition "sensitive" to intergranular attack, it could be restored to the normal corrosion-resisting state by heating to somewhat higher temperature, for example, 1650 to 2000 degrees Fahr., followed by rapid cooling. Inquiry into the circumstance preceding disintegration invariably discloses the controlling factor to have been a heating in the damaging range of temperature. Investigations here and abroad resulted in ascribing this unfortunate behavior to reactions involved in carbide precipitation and solution and a comparatively simple, effective remedy has been developed.

The hypothesis, which appears to explain both the symptoms and the remedy, postulates that the carbon largely dissolved at high temperature and permanently retained in supersaturated solution at ordinary temperatures is rejected in the form of a chromium-rich carbide in the grain boundaries at intermediate temperature. The formation of such a carbide draws heavily upon the chromium content of metal adjacent to a carbide particle, thereby impoverishing it in chromium below the concentration required for normal corrosion resistance.

Accordingly, a vulnerable pathway through the metal is opened up along the grain bound-

---

A MEANS for preventing intergranular corrosion in austenitic 18-8 chrome-nickel stainless steel through addition of titanium was announced last week by the United States Steel Corp. (STEEL, April 10), the development resulting from extensive research work in the corporation's research laboratory, Kearny, N. J. In the accompanying article, portions of a most comprehensive report prepared by the laboratory, are presented the practical aspects of intergranular corrosion and its elimination. Lack of space makes it impossible to review theoretical considerations or experiments from which conclusions were deduced. Authors are members of the Steel corporation's research staff.

Mechanical Properties of a Typical Titanium-Bearing 18-8 Alloy

Form	Ultimate Strength, pounds per square inch	Yield Point, pounds per square inch	Elongation in 2 inches, per cent	Reduction of Area, per cent	Rockwell B Hardness
16-gage sheet	95,000	37,200	55.0	.....	82.0
Seamless tube	91,000	47,000	56.0	54.0	83.0

Chemical Analysis

Carbon, per cent	Nickel, per cent	Chromium, per cent	Titanium, per cent
0.07	9.12	18.08	0.38

aries wherever fine carbide precipitation occurs. Clearly, the separation of only chromium-rich carbide can cause this state of affairs, and if the carbon could be induced to withdraw from solid solution without its quota of chromium, then the alloy would not deteriorate.

This can be accomplished by the presence, in sufficient proportion, of an element capable of forming its own carbide to the substantial exclusion of chromium carbide. The elements titanium, columbium, and probably tantalum, in adequate concentration, combine with most of the carbon, greatly reducing the carbon solubility; an entirely negligible chromium depletion then occurs, and this alloy is not subject to intergranular corrosion.

Columbium Found Suitable

Incidentally, the writers are informed through communications from the Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., that columbium additions completely eliminate intergranular corrosion with no significant impairment of physical properties and that the addition of columbium by ferrocolumbium is easy and efficient. Tests by the authors show that, in the samples of columbium-bearing material received from these laboratories, no sensitization was developed after heating for 1000 hours at temperature of 400-1500 degrees Fahr.

Most of the writers' experience has had to do with titanium-bearing metal and the titanium behavior therefore is described. It is not believed that the reactions with other strongly carbide-forming elements such as columbium, or even uranium, would differ greatly except perhaps with respect to concentrations involved.

Intergranular corrosion is not restricted to austenitic stainless steel, but may be discerned likewise in aluminum and copper alloys, and even in low carbon iron, after immersion in solutions which, for any reason, etch away the grain boundary material much more rapidly than the metal of the grains themselves. It is by no means surprising that corrosion should proceed in this manner since the grain boundary is the initial location of many reactions which tend to alter the local composition or constitution of the alloy and thereby induce local difference in solution pressure.

Metal which has suffered corrosive attack at the grain boundaries may appear essentially undisturbed, yet it will be found to possess reduced strength, and, if the attack is severe, to have lost its characteristic metallic ring; bending or twisting causes innumerable cracks which can be identified as intergranular, or whole grains may fall away from the specimen.

If the attack has penetrated through and through, the metal may even crumble to powder, the particles of which are the crystal grains of the metal. The electrical resistance of metal from which even the thinnest imaginable films of grain boundary material have been dissolved is tremendously increased, and a resistance determination proves to be an accurate measure of the depth of penetration of the intergranular attack.

It may be advisable to state explicitly that in this discussion no reference is made to the normal or general corrosion resistance of stainless steel. The data refer exclusively to a purely intergranular corrosion in a medium (copper sulphate-sulphuric acid solution) which causes no loss in weight on normal (unsensitized) metal, but which is adjusted in concentration to produce the severest possible intergranular attack upon sensitive material. The susceptibility of the intergranular metal, with respect to its failure to equal in resistance the normal grains themselves is the only factor tested; and this is, in all cases, evaluated by the change in electrical resistance caused by the stated immersion in this particular corrosive medium.

What Is Sensitive Metal?

Characteristics of sensitive metal may be summarized as follows:

1. Susceptibility to the specific intergranular corrosion to which austenitic stainless steel is subject increases in severity with continued heating at a temperature in the intermediate range; it reaches a maximum and then with further heating begins to lessen. At the low sensitizing temperatures this recovery may not begin in less than thousands of hours and therefore is not ordinarily observable. At the higher temperatures the recovery may begin in a few hours or less.

2. Severity of the sensitization is proportional to the carbon content of the alloy with little regard to the content of chromium and nickel within the normal limits for the 18-8 or 18-12 alloys.

3. Coarse-grained material is sensitized more rapidly than finer-grained metal.

4. Alloys of the ordinary 18-8

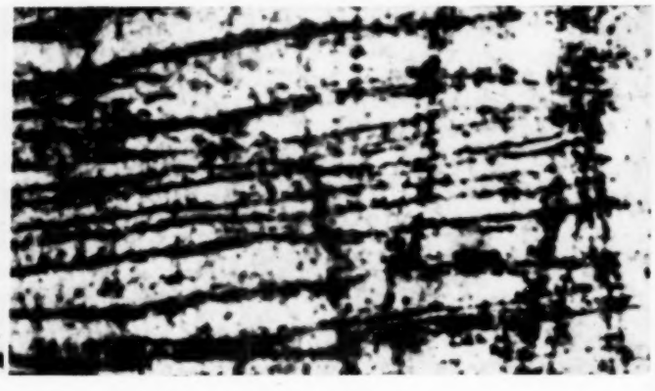


Fig. 2 (Left)—Photomicrograph of carbide particles precipitated in grain boundaries. X 3000. Fig. 3 (Right)—General carbide precipitation upon slip planes within the grain. X 2000

compositions develop some small amount of ferrite and therefore become magnetic with sensitization. Maximum magnetic induction does not coincide with maximum sensitivity and higher nickel alloys become sensitive without becoming magnetic.

5. An intergranular precipitation of a phase, almost certainly carbide, clearly visible in the microscope as very fine particles, typifies the sensitive metal. (See Fig. 2)

6. Actual intergranular corrosion dissolves a relatively wide pathway through the metal along the grain boundaries. Carbide particles probably are not dissolved but the portion of the grain near the grain boundary appears to vanish.

7. Plasticity of the 18-8 alloy is somewhat reduced with sensitization and its hardness and strength increase.

8. Cold-worked metal is more rapidly sensitized, but ultimately never so severely as the annealed, and it promptly begins to be restored with further heating. In this case carbide separation occurs on all slip planes substantially as effectively as upon grain boundaries, giving the effect of a general rather than localized precipitation. (See Fig. 3)

9. In two-constituent alloys, carrying ferrite pools, carbide rejection shows a preference for the ferrite regions which do not show the sensitization imparted to the purely austenitic alloys. The presence of ferrite therefore usually reduces sensitization.

The method of preventing the development of intergranular susceptibility to attack in the austenitic stainless steels at present most widely in use is the addition of a small, appropriate, amount of titanium in the metallic state.

Must Be in Metallic State

In the use of titanium, it is important that this element be introduced, without simultaneous addition of carbon, in such a manner as to insure its preservation in the metallic state, because its efficacy depends upon its combining power with carbon. A sufficient proportion must be present, and this proportion has been experimentally determined as approximately 6 times the carbon content less 0.02 per cent. Moreover, the alloy must be so treated, prior to final fabrication, that opportunity is provided for the titanium to accomplish its purpose. The titanium-bearing alloy, so treated, is hereafter designated as "stabilized."

When these requirements have been met, the alloy may be welded without regard to a subsequent heat treatment. In titanium-bearing metal, properly manufactured, the familiar zones on either side of a weld, distinctly susceptible in ordinary 18-8 are not marked by any measurable susceptibility. In material held at the most destructive temperature for 1000 hours, the susceptibility is reduced by titanium in the order of 10,000 to 1, as measured in terms of penetration by the electrical resistance method.

The table given on Page 22 shows the mechanical properties of typical stabilized titanium-bearing 18-8 metal.

In titanium-bearing alloys carbide precipitation does occur, although of a vastly different nature from that in ordinary metal. Accordingly, heating in the intermediate temperature range may cause some change in physical properties; the tensile strength is increased and the impact strength is somewhat reduced. Due to the extreme plasticity of the austenitic alloy these changes still leave the material in a class with the toughest metals.

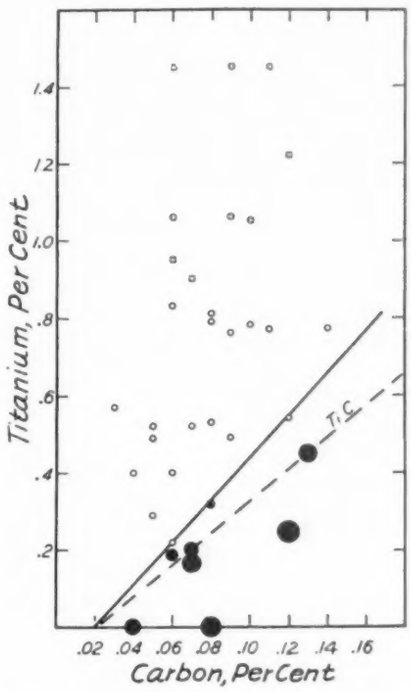


Fig 4—Determination of requisite ratio, titanium to carbon, for stabilization. Open circles indicate no attack, size of solid circles denotes relative degree of penetration

Addition of titanium to 18-8 metal, in excess of the 6 times the carbon less 0.02 per cent ratio, serves to provide a certain margin of safety in metal which has been much overheated prior to exposure to temperatures which would sensitize ordinary metal. This is usually entirely unnecessary and tends in the extreme case to develop ferrite in the otherwise austenitic alloy, a circumstance contributing magnetic induction and a small change in mechanical properties. There is little gained by high titanium ratio and at the same time there are no significant disadvantages, except in special cases. If ferrite is disadvantageous, higher nickel may be employed to eliminate it.

This explanation for the development of susceptibility in the austenitic stainless steels assigns the principal role to chromium-rich carbide, with attendant local chromium impoverishment. It is believed that the function of titanium is to usurp for itself the power of carbide formation, leaving the chromium free to remain in solid solution, where it contributes its full measure of corrosion resistance.

Evidence is not lacking which points to a carbide-forming activity on the part of titanium far in excess of that of chromium; certainly titanium carbide is a very stable compound and it is not difficult to believe that at equilibrium the carbon of an alloy would be largely combined with titanium unless the quantity of titanium was insufficient. Some small amount of each would still remain in solution even if the concentration were in correct proportion to form the carbide TiC, but this amount must be exceedingly small.

Reduces Carbon Solubility

Excess of titanium would still further reduce the carbon not so combined. In solids, as contrasted with liquids, equilibrium is usually only slowly reached at moderate temperature and the reactions actually observed depend as much upon the particular rates at which possible combination and diffusion may occur as upon the conditions imposed at equilibrium. At very high temperatures, at which diffusion is relatively rapid, solids may behave somewhat as do most liquids, and the analogy certainly holds for the reduced solubility of the carbon in the presence of an element such as titanium with which it combines preferentially. Thus, it is believed that carbon solubility in an 18-8 alloy is shifted by the presence of approximately 0.5 per cent titanium.

With respect to carbon combination, it appears that substantial equilibrium is reached in a few minutes at temperatures above perhaps 1825 degrees Fahr. But at lower temperatures reactions are increasingly slow, so that the constitution of the alloy at equilibrium is not readily approached; indeed, it appears that reactions may occur which are not at all in line with the ultimate equilibration. A fairly large section of titanium-bearing metal rejects the carbide of titanium upon slow free cooling in accord with the carbon solubility for a time, but below some temperature, perhaps not far from 1825 degrees Fahr., the carbon is not able to withdraw from solution and therefore remains in supersaturated solution.

It might be expected that a prolonged heating at say 1000 degrees Fahr. would result in the establishment of equilibrium for that tem-

(Please turn to page 25)

Tractors Speed Unloading of Large Machinery Shipment

IN TRANSFERRING about 200 carloads of raw materials, inventory and plant equipment from its Windsor, Vt., plant to its Cleveland plant, the National Acme Co. was faced with the problem of handling 18-20 cars daily of equipment arriving at the latter plant. Included in the shipment from Vermont were several hundred automatic screw machines and a large number of production machine tools, ranging in size up to 90,000 pounds, the weight of one large planer. Removing heavy machines of this type from freight cars to places in the plant is a difficult job, usually requiring a large crew of men, with crowbars, rollers, winches, etc. To avoid demurrage charges, which amount to $5 per car per day, after being held 48 hours, it was essential to unload incoming cars quickly and economically.

Consultation with engineers of the Cleveland Tractor Co., Cleveland, provided the solution to the problem in the form of two crawler tractors of the Cletrac model 15 type, with rubber treaded crawlers. Cars were drawn up to the loading dock, the tractors attached to the loaded machines with steel cable or chain and the machines pulled out of the car and into position on the plant floor. On larger machines rollers were required; on some other equipment a steel shoe or skid plate was used. Tractors developed about 20 drawbar horsepower.

Slippery Floor No Obstacle

The wood block floor of the plant was well soaked with oil and grease and before the work was started there was some doubt as to whether the tractors would have sufficient traction to move the heavier machines. However, no difficulties were encountered in this respect.

The accompanying illustration shows a tractor being used in unloading a car of five automatic screw machines. The small roller visible under the wood framework supporting the machine was used simply to raise the unit over the small door guide on the floor of the car. Once out of the car this machine was pulled along easily on the wood base.

Before bringing in the tractor for this work, an attempt was made to unload these screw machines by the use of two electric and one gasoline industrial trucks. Cost with this arrangement, figuring in the time of three trucks and the crew required approximated $6 per machine. By use of the tractor this cost was reduced to about $1 per machine.

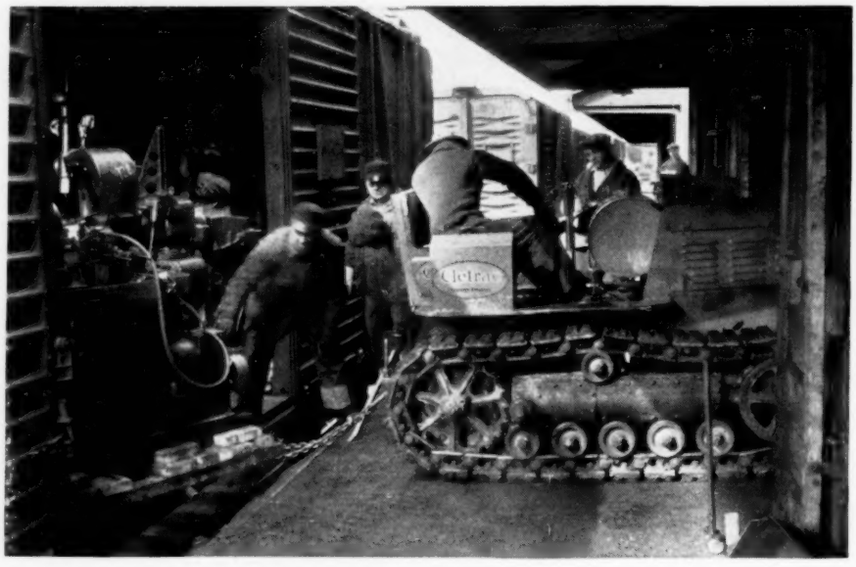
Shipment of small parts and bulk materials was made in wooden boxes, weighing as high as 900 pounds. These boxes were about 4 feet long and of a definite width so that four of them would exactly fill the width of a freight car, thus avoiding the necessity for blocking them up for shipment. In unloading these boxes a number of them were piled on a steel skid plate which in turn was towed speedily to the proper position in the plant by tractor.

Scrap Obsolete Machines

To make room for this large shipment it was necessary completely to rearrange the Cleveland plant. Surplus and obsolete equipment was removed, involving some 625 machines. Of these, 275 were piled in a storage yard, later to be sold for scrap. Out of these 275, 175 were multiple spindle automatic screw machines. About 350 machines were moved to one side, later to be sold. A 12 x 12-foot opening was cut in the plant wall along the loading dock to facilitate moving in some of the larger machines.

A crew of 250 men at both plants was kept working night and day in effecting this transfer. Shipment was started March 9 and the last carload received at the Cleveland plant April 10. No accidents of any type marred the work, other than the breaking of one pulley. The speed with which the job was done precluded any demurrage charges for holding the cars too long. Incidentally the Vermont plant, covering 6-7 acres, now has been abandoned and the property will be sold. All key men have been moved to Cleveland.

Reasons for the move to Cleveland include greater proximity to source of raw materials, as well as to most customers, thus saving appreciably in frieght charges. The Cleveland plant is now set up to perform a complete line of contract screw machine work and facilities are to be provided for high quality contract heat treating work.



Unloading a car of five screw machines by means of a crawler tractor with rubber treads. The machine is easily pulled across the gap between car and loading dock

British Institute Announces Program for May Meeting

Tentative list of technical papers to be presented at the annual meeting of the Iron and Steel institute (England), May 4 and 5, at the Institution of Civil Engineers building, London, is as follows:

First report of the Steel Castings Research committee.

"Structural Changes in Hypoeutectoid Steels on Heating," by Sir H. C. H. Carpenter and J. M. Robertson.

"Some Comparative Corrosion-Fatigue Tests Employing Two Types of Stressing Action," by H. J. Gough and D. G. Sopwith.

"Recent Developments in American Blast Furnace Design and Practice," by W. A. Haven, Arthur G. McKee & Co., Cleveland.

"Internal Combustion Engine Exhaust Valve Failures," by C. C. Hodgson.

"The Influence of Phosphorus on the Properties of Hardened and Tempered Cast Iron," by J. E. Hurst

"Formation of Columnar Crystals in Steel Sheets after Normalization," by F. Kinsky.

"The External Heat Loss of a Blast

Furnace," by D. F. Marshall.
"Coke Consumption in Blast Furnace Practice: Effect of Removal of Breeze," by D. F. Marshall and R. V. Wheeler.
"A Contribution to the Study of the Properties of Austenitic Steels," by L. B. Pfeil and D. G. Jones.
"Contribution to the Study of Inclusions in Steel," by A. M. Portevin.
"The Intergranular Corrosion of the 18-8 Stainless Steels," by E. C. Rollason.
"The Effect of Sulphur and Phosphorus on the Corrosion of Iron," by L. Tronstad and J. Sejersted.

A limited number of copies of these papers are available at a nominal cost. Requests should be addressed to the Iron and Steel institute, in care of G. C. Lloyd, secretary, 28 Victoria street, London, S.W.1.

Grandstand Deck Is Formed of Steel Plates, All Arc Welded

OF ALL-STEEL construction and completely electric arc welded, a new type of stadium or grandstand design has been perfected by the Ingalls Iron Works Co., Birmingham, Ala. With the number of seams reduced to a minimum, it is claimed that this new design gives greater strength with lighter weight and lower cost than other types of construction. In addition it is said to be water tight, permitting full use of the space underneath without damage from leakage.

Substructure may be of any conventional type, comprising columns with beams or trusses to support the deck. Treads and risers for the deck are formed from steel plate, with any desired width of tread or depth of riser being possible. The riser, with a certain portion of the tread at both top and bottom, is considered as a Z-section and calculated for strength accordingly. This, of course will vary with the length of span and load to be carried, thus determining the thickness of plate to be used. The designers recommend that substructure supports to be placed on 20-foot centers, although this may be varied. By cantilevering one plate over each support and avoiding, if possible, any longitudinal seams over supports, the entire structure may be calculated as a continuous beam, thus reducing the moment.

Sections Formed in Brake

Fabrication of the deck is simple. Plates are placed through the brake in the shop and the treads and risers formed. End seams are joggled to obtain a level tread when welded; longitudinal seams, however, are butt welded. All welding is done in the field. Supports for the wooden seats in the form of short steel plate stools are formed in the shop and welded to the deck in the field.

Constant flexure of joints under moving loads in stadia heretofore has made it difficult to maintain water tightness of the deck. The sudden rising of a cheering crowd at a football game, for example, causes vibratory movement in a structure of this type which produces enormous strains upon joints. With the welded construction this difficulty is claimed to be eliminated, with the result that the weatherproof space under the deck may be utilized advantageously for class rooms, gymnasium, auditorium, training quarters, etc.

The construction is patented and the accompanying illustration gives a general idea as to its appearance. Loading tests, with two welded seams between the load points, showed a deflection of only ½-inch under a total load of 26,720 pounds, on a span of 24 feet.

Stabilizing 18-8 Stainless By Titanium Addition

(*Concluded from Page* 23)

perature through the precipitation of titanium-carbide; but in 18-8 alloys containing well over the probable combining (stoichiometric) proportion of titanium, a really significant, though small, amount of chromium-carbide is formed. Under such conditions of experiment a sensitization may actually be detected.

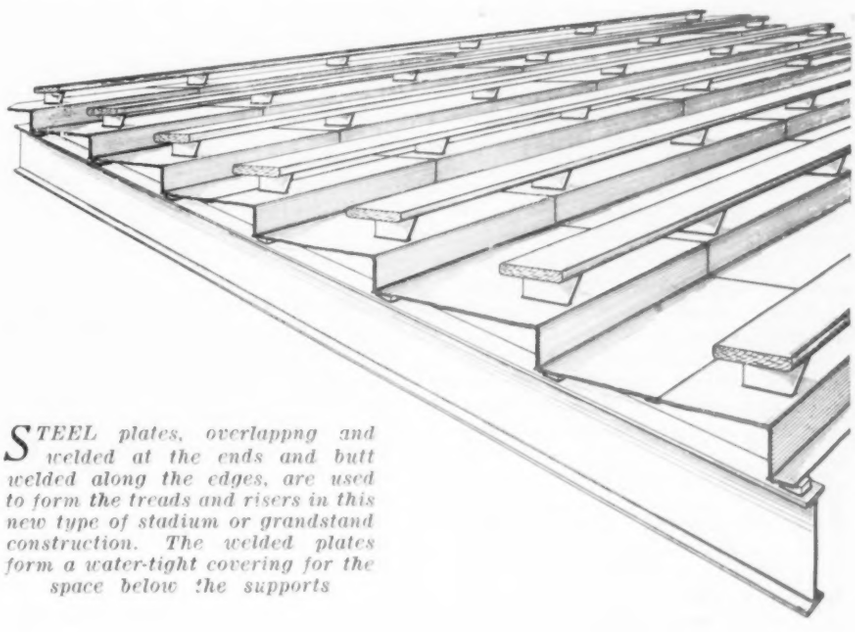
The conclusion as to the desirable proportion of titanium to incorporate into the 18-8 alloy is drawn from a comparatively simple practical test of a number of alloys containing a variety of carbon and titanium concentrations. All the materials were coarsened at about 2010 degrees Fahr. to predispose rapid sensitization and then sensitized at 1200 degrees Fahr. for 16 hours. Intergranular corrosion was brought about in the sensitized members of the series by the customary immersion in boiling sulphuric acid-copper sulphate solution for 24 hours. Even slight intergranular attack was made evident by a twisting operation and the results are shown in Fig. 4.

Boundary Line Is Drawn

Compositions showing no detectable attack are designated as open circles; the relative intensity of attack in the others is indicated by the size of the solid circles. A line marking the approximate boundary between susceptible and nonsusceptible compositions is drawn. Since the slope of this line is about 5.5 and since the prolongation of the line indicates that about 0.02 per cent carbon causes no susceptibility in titanium-free alloys, a general working rule is drawn as follows:

The metallic titanium content should not be less than about 6 times the carbon content less 0.02 per cent.

Clearly, the exact maximum carbon content for actual freedom from possible sensitization in titanium-free alloys is not determined in this test and it may lie at a value slightly below 0.02 carbon—but for commercial material the validity of this rule is not affected by this circumstance.



STEEL plates, overlapping and welded at the ends and butt welded along the edges, are used to form the treads and risers in this new type of stadium or grandstand construction. The welded plates form a water-tight covering for the space below the supports

Making the Most of

METHODS AND MATERIALS

TWO electric furnaces used in the plant of a wire cloth manufacturer for annealing the wire prior to weaving are supplied with current from the main switchboard through an oil switch at 440 volts to two smaller oil switches, one for each furnace. From each of these smaller switches the power goes through a transformer, being stepped down to 220 volts. There are three separate settings for heats, ranging respectively up to 600, 1200 and 1950 degrees Fahr. With indicating, recording and automatic control devices, the operator can select any heat within these three ranges. This feature, designed by the company's electrical maintenance engineer, has two advantages: First, it enables the company to regulate the power input to the furnace in a satisfactory manner; and second, it provides an efficient method of bringing the furnaces up to required heats quickly, after which the lower connections can be used for the work to be done.

$ $ $

When coatings up to 0.02-inch thick are applied by metal spraying a sand blast bond usually is adequate. On machine parts, however, when using heavier deposits an additional roughening often is employed. For example, a shaft may be knurled or a fine thread cut used, in addition to sand blasting. In this manner, the sprayed molten particles are driven into the roughened surface and anchored securely with the parent metal. Flat surfaces which may not be revolved often are roughened with air tools or other hand devices.

$ $ $

MANY aircraft parts are made from seamless chrome-molybdenum steel tubing of relatively thin wall to insure lightness. They are assembled by oxyacetylene welding and are thereafter heat treated to a very high strength by quenching in oil from 1600 degrees Fahr. and tempering for ductility. These thin parts must be thoroughly and reliably protected against corrosion and this is being accomplished in one eastern plant by cadmium plating the exterior, treating the interior with a suitable protective compound and then sealing all the openings. Some of these parts are of unusually large size, such as struts, landing gear and motor mounts, therefore the plater was obliged to install new tanks and plating equipment capable of accommodating these bulky members.

$ $ $

A new and interesting use for cellophane was discovered recently in a plant in the midwest in which motors for electrical refrigeration are manufactured. A difficulty had been that the lacquer finish on the motors was

marred easily and printed by pressure, particularly when the motors were piled one upon the other as was frequently the case. Various materials were tried to prevent this marring, but nothing was successful until sheets of plain transparent cellophane were placed between the motors. This eliminated printing and marring completely. The cellophane pulls free from the paint or lacquer leaving no imprint and no fuzz.

$ $ $

Many users of incandescent lamps find it economical to establish a periodic lamp replacement schedule through which lamps are removed from important points before burned out and placed in less important sockets or destroyed. Analysis discloses the slight cost of this procedure. For example, consider the 100-watt mazda lamp which the reasonably large user will purchase for less than 30 cents. During its rated 1000-hour life, it will consume 100 kilowatt-hours of energy which even at such a low rate as 3 cents per kilowatt-hour will cost $3.00. A 10 per cent average loss in efficiency during such a burning time, say the second 1000 hours, would be equivalent to 30 cents, or the cost of a new lamp.

$ $ $

The bureau of supplies and accounts, navy department, Washington, recently received bids on corrosion-resisting steel fore and main signal masts and antennae yards for installation aboard warships. This is the first time such masts and yards have been specified in this type of steel.

$ $ $

MOLYBDENUM as an alloy in gray iron rapidly is becoming recognized as a producer of grain refinement and strength at the center of large sections. An eastern foundry now is casting 1500-pound gear blanks, from which the teeth are hobbed, containing 0.50 per cent molybdenum. This foundry is obtaining 40,000 pounds per square inch tensile strength at the base of 2½-inch teeth, from a cupola mix containing 50 per cent steel.

$ $ $

Engineers are considering the use of heat and corrosion-resisting steel preheater tubes in garbage incinerator plants. Tests have shown that the heat resisting properties of this metal make it advantageous for this particular use.

$ $ $

Recent tests have shown that the addition of 1.25 per cent chromium to cast iron will reduce growth and oxidation losses. Sixteen per cent chromium added to cast iron greatly improves its corrosion-resisting properties and warpage, but the best results to date have been obtained from 28 per cent chrome steel. This metal resists oxidation, abrasion and the attack of sulphur gases. While the first cost is considerably greater than cast iron or carbon steel, service tests in many places, under the severest conditions, showed that the longer life of 28 per cent chrome steel more than justifies the use of this metal. Chrome steel is available in the form of castings, plates, bars and tubing.

IMPROVING OPEN-HEARTH FURNACE DESIGN

BY WILLIAM C. BUELL JR.

Part V—Open-Hearth Furnace Lines

(Twenty-Eighth Article of Series)

OF THE furnaces fired with a driven fuel, oil, tar, or coke oven gas, end injected, B, D, E, F, H, I, M and P, all show normal firing axes parallel to the center line excepting furnaces F and H whose normal firing axes inclines to the front doors. With the type of equipment ordinarily employed for injecting these last mentioned fuels, a slight change in the direction of firing may be accomplished easily at any time, in the horizontal plane, while a considerable change is possible in the vertical plane.

Critical areas developed for the various furnaces shown in Fig. 45 are presented in Table LIII. In this table A_1 is the cross sectional area over the furnace hearth at its greatest development and is usually at this size for nearly if not the entire length of the hearth. Obviously this area is a principal determining factor of the gas velocity over the hearth and on this account a correct area is of much importance. The measurement of these areas is above the foreplate line. In operation, the bath generally will expand to raise above this line and consequently until the conclusion of the ore and lime boils the area available for the flow of the furnaces gases will be somewhat less than those given. A relatively great cross section with the consequent lower furnace gas velocity appears advantageous.

Aside from the question of area the contour of the cross section perimeter is of considerable importance in operation. Better transfer of heat from the furnace gases to the bath will be accomplished if the section is developed wide and low rather than narrow and high but if the roof is relatively too low the erosive effect of the flame may be great with

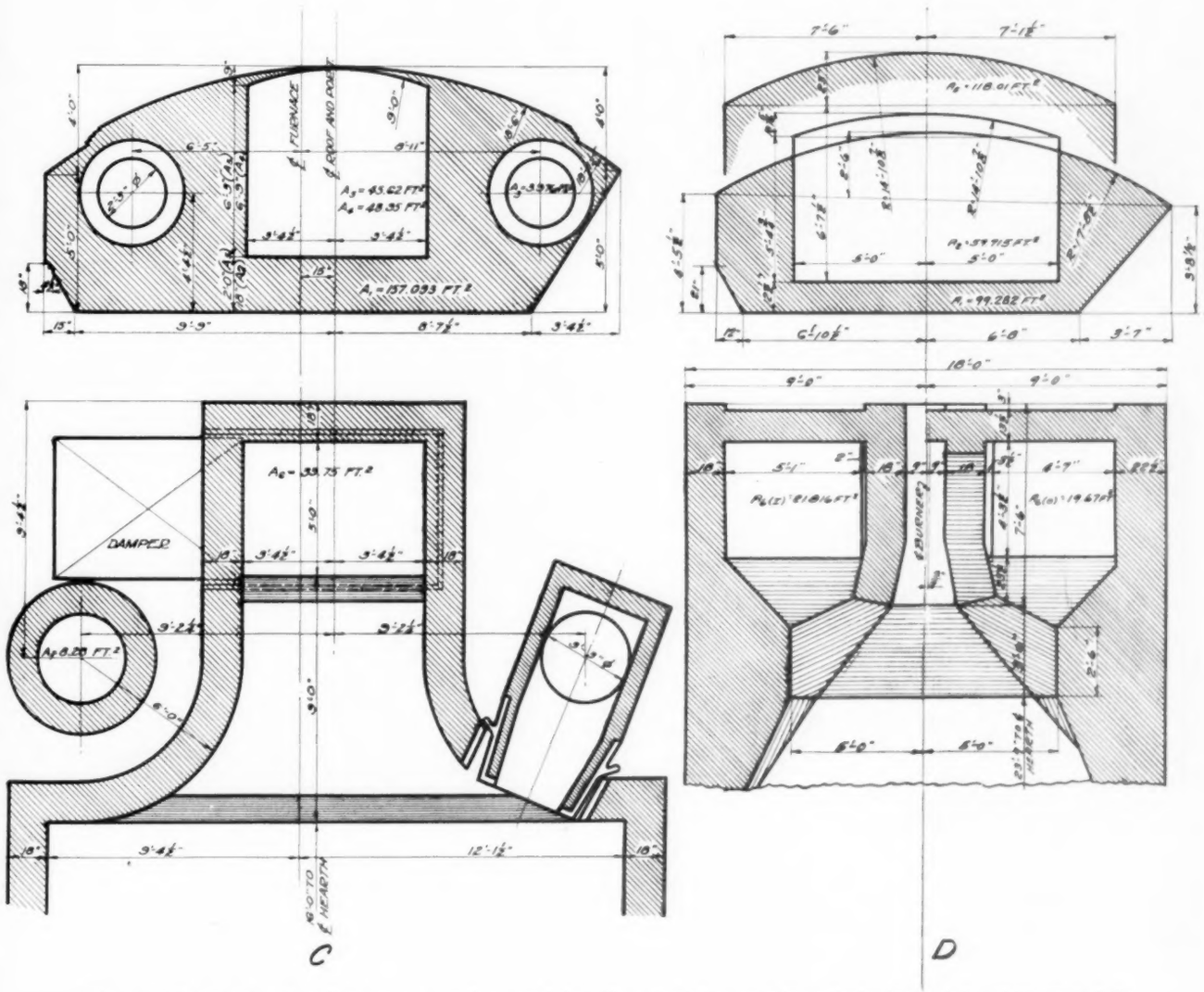


Fig. 45—Principal and critical cross sections and details of uptakes and throats in plan of furnaces C and D

an excessive amount of the oxides and bases of the bath splattering on the roof from the ebolutions within the molten charge.

Governed by Precedent

Height of roof over the foreplate elevation appears from the previous discussion to be more or less based on precedent, the width of the bath on the tonnage rating of the furnace and building or mechanical limitations. Accordingly, the development of the area A_1 largely is a matter of compromise. Compromise, almost always present as a factor of open-hearth furnace design, is the most baneful factor against decided design improvement.

Of the 16 furnaces listed the areas A_1 vary from 96.155 to 157.093 square feet, or from 1.0 to 1.6 while ascribed tonnage capacity varies 1.0 to 3.0.

Figs. 45*G* to 45*P* will be presented in subsequent issues.

(To be Continued)

Table LIII

Critical Areas of Open-Hearth Furnaces, Square Feet

	Areas										
	—Laboratory—		——Throat——			Air Uptake		Fuel Uptake		Combined Downtake	
Furnace	A_1	A_2	A_3	A_4	A_5	A_6	Perimeter	A_7	Perimeter	A_8	Perimeter
A	104.65	45.16	5.28	43.90	73.80	18.0	24.0	10.5	13.0	23.285	32.875
B	113.8	64.8	.....	83.6	60.8	60.0	44.0	.....	.....	60.0	44.0
*C	157.093	.....	15.90	48.95	45.62	33.12	40.84	.....	.....	33.75	23.5
D	99.282	59.715	.....	.....	118.01	41.488	32.5	.....	.....	41.488	32.5
E	106.761	69.17	.....	.....	84.03	56.70	44.33	.....	.....	56.70	44.33
F	96.155	61.60	.....	91.24	100.64	64.75	46.5	.....	.....	64.75	44.62
†G	97.89	71.70	11.64 / 14.87	37.23	87.52	.....	.....	21.375	18.5	41.39	48.75
H	100.105	47.58	.....	47.55	71.55	56.56	42.33	.....	.....	56.56	42.33
I	103.125	58.10	.....	67.60	77.60	42.60	36.5	21.25	18.5	63.85	55.0
J	123.595	50.00	4.65	60.62	122.75	68.40	47.0	14.0	15.0	73.05	53.25
K	125.260	55.32	4.951	74.75	66.13	43.86	39.75	6.9	10.5	48.81	47.83
‡L	106.105	54.98	3.55	57.45	67.20	37.00	34.5	17.0	12.5	54.0	47.0
M	122.436	53.545	.....	66.17	77.425	58.50	43.6	.....	.....	58.50	43.6
N	124.10	54.652	6.723	41.615	78.675	33.75	33.0	13.125	13.5	40.473	43.5
O	155.875	56.90	6.723	61.155	87.187	42.36	36.0	13.125	13.5	49.083	52.12
P	117.55	40.32	8.34	71.0	131.25	55.8	42.5	12.7	13.75	68.5	56.25

*Furnace C incorporates the McKee-Tonnar system.
†Furnace G incorporates the McKune port damper system.
‡Furnace L incorporates the Rose sliding gas port.

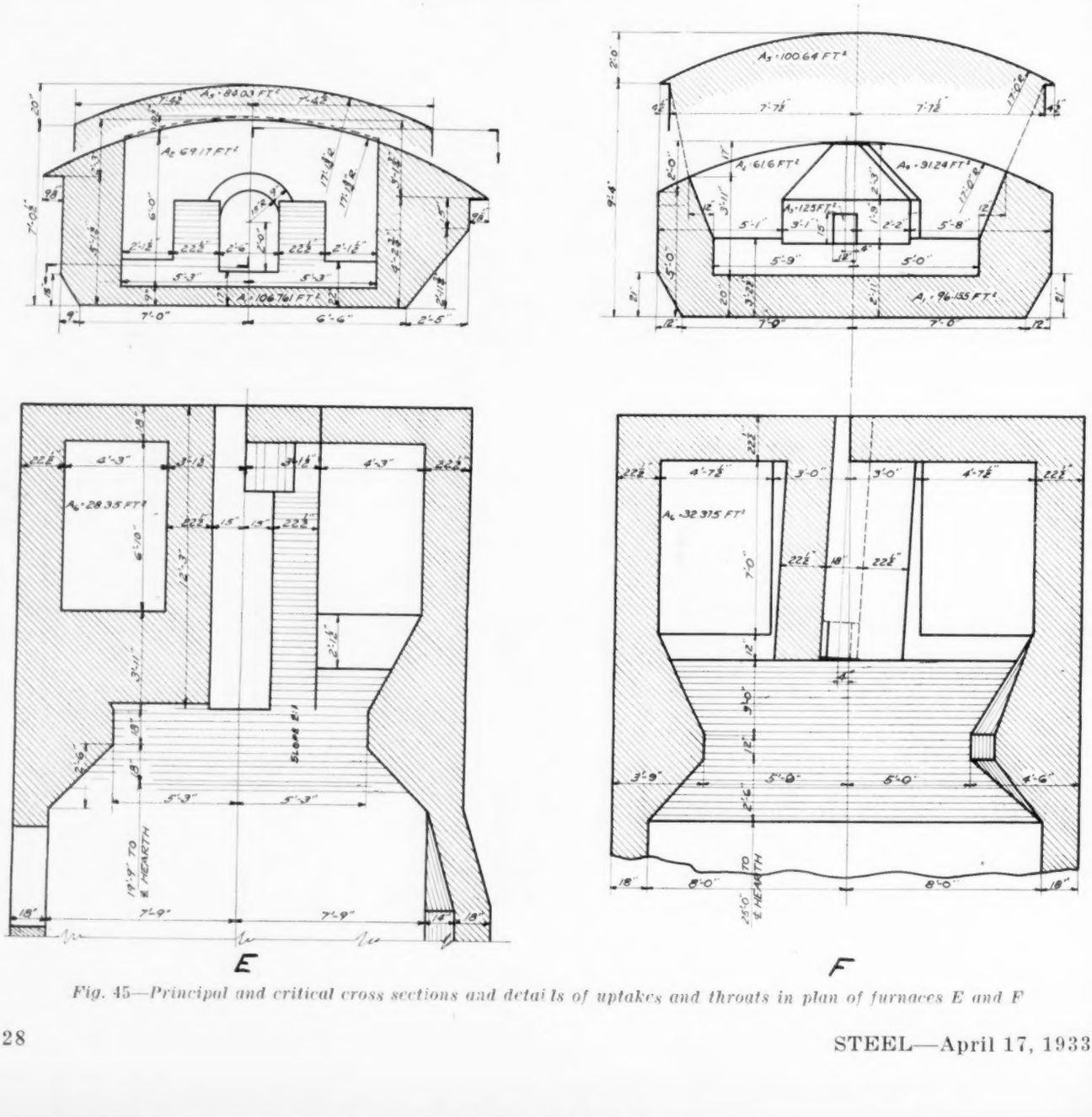
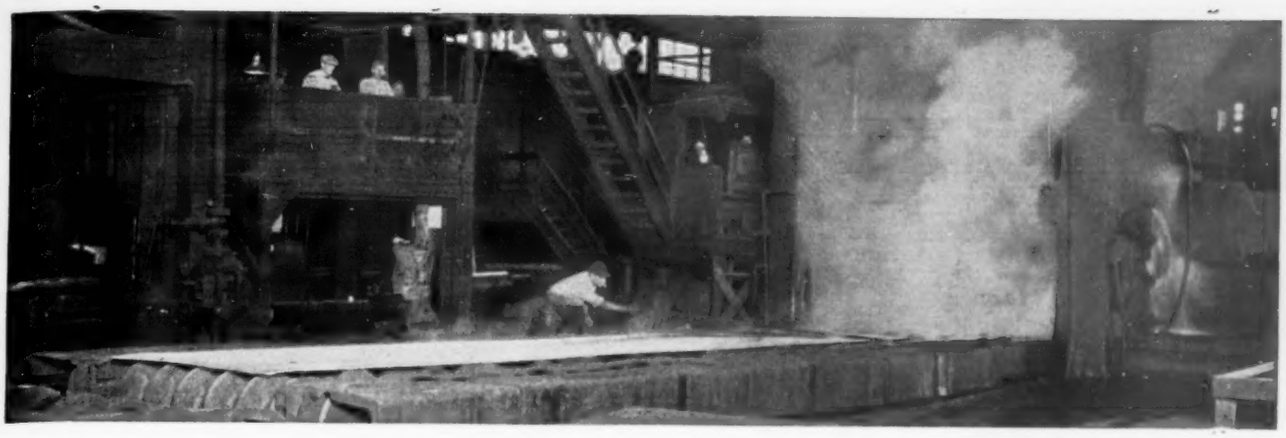
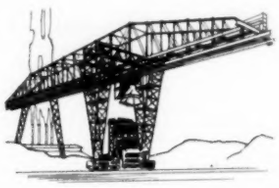


Fig. 45—Principal and critical cross sections and details of uptakes and throats in plan of furnaces E and F



PROGRESS IN STEELMAKING

LOW fuel rates have been obtained by a steelmaker in the Great Lakes district in the operation of insulated soaking pits. The quality of heating when the pits are fired with 100 per cent blast furnace gas is superior to that encountered when coke oven gas is used as fuel.



RECLAMATION of the teeth and lips of dippers and buckets for handling iron ore and limestone at ore docks and blast furnace storage yards, is facilitated by a recently marketed electrode for manganese welding. The coated wire also can be applied to ordinary steel and iron to obtain a manganese steel surface. No quenching of the weld metal is necessary.

♦ ♦ ♦

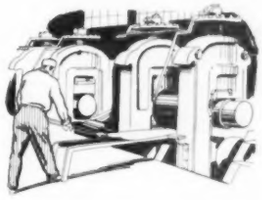
Installation of laminated nonmetallic bearings in all stands and spindle carriers of a 10-inch hot strip mill in the Chicago district obviated the necessity of purchasing 300 additional horsepower. Power savings as a result of the composition bearings is reported as 35 per cent.

♦ ♦ ♦

Mechanical tubing from 2 to 5 inches diameter and in thicknesses under 0.25-inch is being made at the rate of 14 lineal feet a minute by a recently developed continuous automatic forming and welding machine. Strip steel, the raw material, is rendered circular in seven passes by the forming rolls and then is guided into the welding unit where the welding head, consisting of six sets of electrodes, effects fusion of the edges. The tube passes between vertical and horizontal sizing rolls, five sets of straightening rolls and thence into the automatic cutting-off unit which makes a cut without interfering with the progress of the tube.

♦ ♦ ♦

Gas-fired baking ovens thermostatically controlled and with the air changed continuously by an exhaust system have decreased the baking time of rods at a midwestern plant to approximately 60 minutes. The rods and wire in transit through the oven are suspended loosely from a monorail and are subjected to a rapid current of hot air continually. The product, however, is pickled in sludge acid, the bath being maintained at a low temperature.



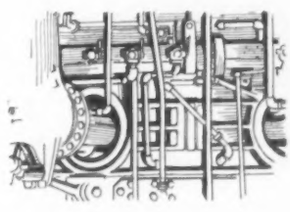
INDICATION of the length of a sheet after each pass through the rolls of a conventional type hot sheet mill without measuring with a gage rod now is afforded by a new device. A small self-synchronous generator is geared to the mill so that its speed is proportional to the speed of the sheet in transit through the rolls. A receiver is connected through a magnetic clutch to a pointer on a dial which indicates the length of the sheet. When the front end of the sheet depresses a flag switch, a clutch is energized, connecting the pointer to the receiver which is rotating at a speed corresponding to the speed of the work. Meanwhile, the pointer has begun to rotate, and continues until the tail end of the sheet passes over the flag switch, releasing it. The position of the pointer at this instant is an indication of the length of the sheet. The device can be arranged so that the pointer resets immediately, or it can be held in the position for a few seconds, and then reset automatically.

♦ ♦ ♦

Use of two controls, one serving the chamber and one the bath, has been found advantageous in the operation of electric lead pots for hardening steel from 1500 to 1600 degrees Fahr. When bringing the furnace from the cold side up to hardening temperature the chamber thermocouple controls the heat input; afterwards, the bath thermocouple takes control. Otherwise, when full power is applied the heating elements generate heat at a rate faster than the cold lead pots can absorb.

♦ ♦ ♦

Firing galvanizing kettles so that the heat input is at the bottom or at the sides near the bottom leads to dross agitation and a high production of dross, according to an authority on galvanizing practice. Underfiring shallow galvanizing pans frequently results in the production of 35 per cent dross.



DOUBLE-COMPARTMENT cooling plates designed for the bosh and inwalls of blast furnaces and affording the same advantages as double-compartment tuyeres now are on the market.

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

New Flying Shear Handles Light Gage Strip Steel

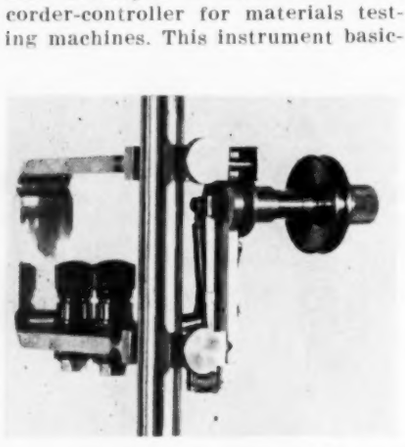
United Engineering & Foundry Co., Farmers building, Pittsburgh, announces the development of a new high-speed precision flying shear for light gage cold-rolled strip steel. The shear is designed to handle strip up to 36-inch width, from 0.006 to 0.025-inch thickness, and into any selected length from 12 inches to 26 inches in increments of 1/64. It also will handle strip from 26 to 52-inch length by increments of 1/32. Action is continuous and fully automatic and a maximum speed of 300 feet per minute can be obtained.

Importance of obtaining each length exactly as desired without error has necessitated the designing of a gear box having a total of 832 changes of speed. Change of speed of the gear box to obtain different lengths is effected quickly by moving three levers conveniently located on one side of the gear box.

◆

Develops Recorder-Controller For Materials Testing Units

Baldwin-Southwark Corp., Chester Park and Simpson, Eddystone, Pa., has developed a stress-strain recorder-controller for materials testing machines. This instrument basically is a combination of several devices including an extensometer (shown herewith), Bourdon tube, and a hydraulic valve in association with motors, relays, solenoids, and mechanical clutches. The extensometer or strain gage, fundamentally is a micrometer screw in combination with a mechanical lever multiplying system. It is easily attached to specimens.



Extensometer used with Southwark-Emery recorder-controller

The development comprises an important step in the field of materials testing. It never before has been possible, according to the manufacturer, to control automatically within narrow limits rates of strain and stress application and with some materials, e.g. lead and other nonferrous materials, these rates are of vital importance in the interpretation of results of tests.

◆

Machine Trims Flash from Butt Welded Seams

Morton Mfg. Co., Broadway and Hoyt, Muskegon Heights, Mich., recently developed a high-duty draw-cut flash trimming machine designed especially for trimming the flash or upset from butt welded seams in steel barrels, grease drums or other circular work. The unit has a 40-inch cutting stroke and trims on the inward or draw-cut stroke of the rams. A push button operation automatically clamps the work and the rams start on the inward stroke. This machine automatically takes care of any slight variation in thickness or taper of the metal which is an important feature.

◆

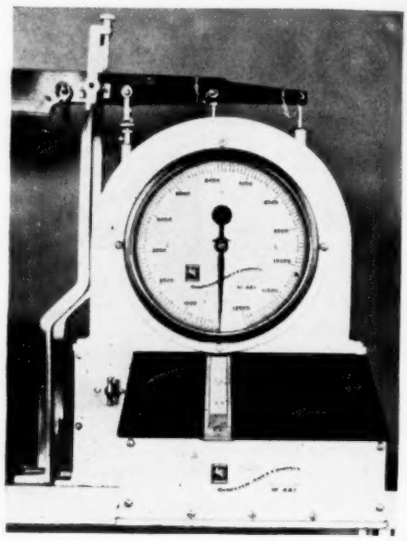
Bronze Employed in Sump Pump Construction

M. L. Oberdorfer Brass Co., 8007 Thompson road, Syracuse, N. Y., is manufacturing a new model automatic electric sump pump. A ¼-horsepower vertical-type motor is used. The unit is driven through a stainless steel shaft supported by oilless bearings. All bronze construction is employed in the pump which has a semi-enclosed impeller designed to handle ordinary solids. Capacity is from 3000 gallons per hour at low heads to 1000 gallons at the maximum head of 20 feet.

◆

New Line of Units Records Weight Automatically

Streeter-Amet Co., 4101 Ravenswood avenue, Chicago, recently developed a new line of automatic weight recorders. The closeup of the indicating head of type MT-18, shown herewith, reveals the clarity and ease with which the figures on the dial may be read. Directly below the dial is the tape upon which weights are recorded.



Indicating head of Streeter-Amet automatic weight recorder

The units are designed to meet a wide range of weighing requirements of mines, quarries, railways, steel, iron and glass plants, etc. Recorder capacities go as high as 800,000 pounds by 400 pound graduations. An ingenious variable port dash pot allows accurate operating installations in location of extreme vibration. Automatic printed weights are recorded while the material is being transported on a conveyor, in a rail car, truck, or other means of conveyance. Only two and one-half to three seconds are required for perfect balance in motion weighing, it is claimed.

◆

Designs High Lift Swinging Boom Crane Truck

Yale & Towne Mfg. Co., Philadelphia division, Philadelphia, has developed a high lift swinging boom crane truck. Swinging boom with hook on this truck is mounted on large diameter rollers so that it can be swung easily by hand 45 degrees from center line in either direction, or a total arc of 90 degrees. Capacity is 1200 pounds. Due to high lifting features of this crane the hook can be varied from a height of 33 to 102 inches.

Steel Buying Spreads; Rate Passes 20 Per Cent

Up 3 Points in Week, Effacing All Losses Due to Bank Holidays—Stronger Tone in Nearly All Markets—Scrap Prices Continue Upward

CONSUMER interest which for several weeks has been strongest in raw materials—notably pig iron and scrap—has spread to finished steel products, resulting in a lift of 3 points to 20½ per cent in the steel operating rate last week, with indication of a further gain of a point or two this week.

This restoration of the early February rate, prior to the breakdown caused by the banking holidays, is supported largely by automotive and general miscellaneous requirements. In fact, all the principal consumer classifications except the building industry have participated. Automobile production has come back so rapidly that April output now appears certain to top January and exceed every month since last June.

The Erie railroad's order for 24,549 tons of rails, its inquiry for more than 4000 tons of track fastenings; the Missouri Pacific's inquiry for 7000 tons of tie plates; and the New York Central's authorization of 9000 tons of rails are believed forerunners of slightly improved railroad buying. There is an undercurrent of opinion in the East that President Roosevelt's railroad program will involve the scrapping of much equipment and its replacement, partly to provide work. Many of the carriers, incidentally, are trying to barter scrap for new rails.

The first pipe line order of consequence is for 4000 tons for the Pure Oil Co.'s Toledo-Detroit line, booked by the Youngstown Sheet & Tube Co. and National Tube Co. Seasonal requirements for cast pipe continue to expand, with 2600 tons placed by Montrose, N. Y. Prices on 10,000 tons purchased recently by Chicago were the lowest since 1914. As a further incentive to buying, wrought iron pipe has been reduced $11 to $40 per ton.

An almost complete cessation of federal and state projects is reflected in the reduced volume of structural shape orders, 5215 tons. This includes 1055 tons for breweries at Buffalo and Milwaukee. In the Buffalo district fabricators are figuring on 20,000 tons, including government-financed bridges; and at Baltimore 5000 tons are being negotiated for Pennsylvania railroad piers.

A surge of buying continues in scrap, for domestic consumption, and export. One eastern scrap interest alone is loading eight cargoes for shipment abroad. Stocks are being accumulated at Chicago in anticipation of a heavy vessel movement this season. Prices again have advanced at Chicago, St. Louis, Pittsburgh, Detroit and Philadelphia. Since the first of the year there has been an almost continuous rise in scrap.

Pig iron deliveries so far this month by lake furnaces exceed their entire volume for March. More small melters now are coming into the market. Less competition from Middle Western steelworks has still further strengthened merchant iron prices. Southern makers indicate two stacks may be relighted May 1, and are advancing prices $1 per ton.

A tendency on the part of steel consumers to anticipate requirements, in some instances to acquire stocks, is responsible in no small degree for increases in ingot production in virtually all districts. Chicago is up 5 points to 20 per cent; Buffalo up 5 to 19 per cent; Pittsburgh ahead 4 points to 18; and Youngstown advanced 2 points to 19 per cent. Finishing mills show a corresponding acceleration to the best rates so far this year.

Sheetmakers again are endeavoring to advance galvanized $2 per ton, announcing this effective April 17. On plates, shapes and bars the full official prices are obtained only on the small orders, which, however, comprise the bulk of tonnage. STEEL's iron and steel composite continues $28.14, the finished steel composite, $44.90; while that for scrap is up 16 cents to $6.87, compared with $6.21 Jan. 1.

Composite Market Averages

	April 15	April 8	One Month Ago March, 1933	Three Months Ago Jan., 1933	One Year Ago April, 1932	Ten Years Ago April, 1923
Iron and Steel Composite	$28.14	$28.14	$28.35	$28.68	$29.75	$47.01
Finished Steel Composite	44.90	44.90	45.60	46.13	47.62	66.88
Steelworks Scrap Composite	6.87	6.71	6.47	6.23	7.76	22.95

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	April 15, 1933	Mar. 1933	Jan. 1933	Apr. 1932
Pig Iron				
Bessemer, del. Pittsburgh	$16.26	15.76	15.76	16.76
Basic, valley	14.00	14.00	14.00	15.00
Basic, eastern, del. eastern Pa.	14.19	13.50	13.50	15.00
No. 2 foundry, del. Pittsburgh	15.76	15.76	15.76	16.26
No. 2 foundry, Chicago	15.50	15.50	15.50	16.00
*Southern No. 2, Birmingham	11.00	11.00	11.00	11.00
**No. 2X, Virginia furnace	17.75	17.75	17.75	18.00
**No. 2X, Eastern, del., Phila.	14.51	13.76	13.76	15.66
Malleable, valley	14.50	14.50	14.50	15.50
Malleable, Chicago	15.50	15.50	15.50	16.00
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	23.04
Gray forge, del. Pittsburgh	15.63	15.63	15.63	16.13
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	80.24

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	1.75	1.75	1.75	2.25
Connellsville, foundry, ovens	2.25	2.25	2.50	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	27.00
Wire rods, Pittsburgh	35.00	35.00	36.20	37.00

	April 15, 1933	Mar. 1933	Jan. 1933	Apr. 1932
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.91
Iron bars, Chicago	1.65	1.65	1.65	1.70
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.65	1.65	1.70	1.75
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.54½	1.59½	1.66	1.79½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.55	1.55	1.65	1.70
Sheets, No. 24, hot ann., Pitts.	2.00	2.00	2.05	2.20
Sheets, No. 24 galvan., Pitts.	2.60	2.60	2.70	2.85
Sheets, No. 10 blue anneal., Chi.	1.70	1.70	1.85	1.85
Sheets, No. 24 hot ann., Chicago	2.15	2.15	2.25	2.35
Sheets, No. 24 galvan., Chicago	2.75	2.75	2.85	3.00
Plain wire, Pittsburgh	2.10	2.10	2.15	2.20
Wire nails, Pittsburgh	1.85	1.85	1.90	1.95
Tin plate, per base box, Pitts.	4.25	4.25	4.25	4.75
Scrap				
Heavy melting steel, Pitts.	$10.00	8.75	8.35	10.20
Heavy melting steel, eastern Pa.	6.50	6.50	6.50	7.20
Heavy melting steel, Chicago	5.75	5.25	5.25	6.55
No. 1 wrought, eastern Pa.	7.00	6.75	6.50	7.95
No. 1 wrought, Chicago	5.00	5.00	5.00	5.85
Rails for rolling, Chicago	8.25	7.85	8.05	8.90

Sheets

Galvanized Up $2 to 2.70c—Mills at Best Rate of Year, Due Chiefly to Auto Releases

SHEET PRICES, PAGE 33

Chicago—Galvanized sheets were advanced to 2.70c, Pittsburgh, equivalent to 2.80c, Gary, and 2.85c, Birmingham, effective April 17. Formal announcement was made by the Inland Steel Co., but the entire industry is expected to go along. Higher prices for scrap and spelter are responsible. Local sheet mills continue to operate at 35 per cent, with automotive specifications steady and releases from refrigerator manufacturers good.

Pittsburgh—To roll the bulge in sheet specifications which developed two weeks ago, sheet mill operations improved to a shade over 25 per cent. To accompany this rate, which places mill operations at their highest for the year, has come a notable price firmness, several tonnage orders last week for cold-rolled sheets carrying the full market quotation. The galvanized sheet market is showing no change, with 2.60c applying in general, although some lower priced material in jobbers' hands has yet to be worked out. Black sheets show no significant development but remain 2.00c, Pittsburgh. A noteworthy improvement in electrical sheets has been in effect for several weeks. One producer has received almost 800 tons of new electrical sheet business from one account in that time.

Cleveland—New orders for automotive sheets, mostly rush shipment, have increased substantially, principally from Chevrolet, Ford and Chrysler. Partsmakers also are more active. The Cleveland sheet mill now is operating at 50 per cent on automotive account, and a nearby lake mill at 35 to 40 per cent. The total volume of sheet orders in the week was the largest of any similar period this year. Refrigerator and washing machine manufacturers are increasing production; miscellaneous demands are more numerous. Some mills are receiving a "flood" of inquiries from manufacturers of beer cases. One such inquiry current calls for 1000 tons of hot-rolled sheets. A Defiance, O., fabricator was in the market for several hundred tons of galvanized for beer cases. Several important contracts for sheets for barrels are up for renewal. Prices are firmer.

New York—Sheet buying continues slack following the release of specifications against old contracts at the close of last quarter, at which time some sellers experienced the best business in a long time. Until this material has had an opportunity to be consumed, sellers look for restricted activity. Prices are unchanged. Bids close April 25 on approximately 150 tons of corrugated No. 24 gage galvanized pure iron, copper-bearing iron or copper-bearing steel roofing for Panama.

Philadelphia—Trading in sheets again is featured by fairly good buying by autobody makers. Volume of this business the past two weeks has been the best this year. Practically all has been going at old prices, although with April 15, deadline on shipments for many mills, now past, higher prices are being extended to this class. Bids were opened last week by Pennsylvania on 700 tons of license tag stock.

Cincinnati—General demand for sheets is being maintained at the improved rate established recently, keeping production of district mills above 30 per cent. Automotive specifications are better, and some business is traced to beer. Prices are firm.

St. Louis—Producers and distributors of sheets report further gradual betterment both in new orders and specifications. Demand is somewhat spotty, but some users who have not been in the market for months, are active.

Birmingham, Ala.—Spot business warrants fairly good sheet output.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

*Pittsburgh, base	1.50c to 1.60c
Chi. dist. mills	1.50c
Chicago, del.	1.55c
New York, del.	1.75c
Birm., base	1.55c
Philadelphia, del.	1.71c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.55c
Chi. dist. mills	1.65c
Chicago, del	1.70c
Phila., del.	1.86c to 1.96c
New York, del.	1.90c to 2.00c
St. Louis, del.	1.89c
Birm., base	1.70c
San Fran., c.i.f.	2.32½c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.00c
Chi. dist. mills	2.10c
Chicago, del.	2.15c
New York, del.	2.35c
Phila., del.	2.31c
Birmingham, base	2.15c to 2.25c
St. Louis, del.	2.34c
San Fran., c.i.f.	2.85c
Detroit, del.	2.18½c

GALVANIZED No. 24

Pittsburgh, base	2.60c
Chi. dist. mills	2.70c
Chicago, del.	2.75c
Philadelphia, del.	2.91c
New York, del.	2.95c
Birm., base	2.75c
St. Louis, del.	2.94c
San Fran., c.i.f.	3.50c

TIN MILL BLACK No. 28

Pittsburgh, base	2.30c
Gary, base	2.40c
St. Louis, del.	2.64c

HEAVY COLD ROLLED No. 10

Pittsburgh, base	1.90c
Chi. dist. mills	2.00c
Chicago, del.	2.05c
Philadelphia, del.	2.21c
New York, del.	2.25c

COLD ROLLED No. 20

Pittsburgh, base	2.30c
Do, autob. qual.	2.55c
Do, furn. qual.	2.90c
Chi. dist. mills	2.40c
Chicago, del.	2.50c
Philadelphia, del.	2.61c
New York, del.	2.65c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh

Tin plate, coke base, contract	$4.25
Do., stock	3.75
Long ternes, No. 24 unassorted	2.75c

Gary base, 10 cents higher.

Corrosion, Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Steel Plates

*Pittsburgh, base	1.50c to 1.60c
New York, del.	1.60c to 1.70c
Phila., del.	1.49½ to 1.59½
Boston, del.	1.82c to 2.02c
Buffalo, del.	1.85½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Birmingham, base	1.75c
Coatesville, base	1.40c to 1.50c
Pacific Coast, c.i.f.	2.00c
St. Louis, del.	1.94c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.65c to 1.75c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawan., base	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, base	1.75c
Lackawan., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.95c
Boston, del.	2.02c
Pitts., cold finish	1.70c
Pitts., forg. qual.	1.75c and 1.85c
San Fran., c.i.f.	2.10c

RAIL STEEL

Pitts., Buff., St. Louis	1.30c
Chicago, base	1.50c
Eastern mills	1.30c

IRON

Chicago, base	1.60c to 1.65c
New York, del.	1.85c to 1.90c
Philadelphia, del.	1.81c to 1.86c
Pitts., refined	2.70c to 4.20c

REINFORCING

Billet, mill l'gths.	
Chi., Pitts., Buff.	1.40c
Do Cleveland	1.45c
Do Detroit	1.60c
Chicago, rail steel	1.30c
Phila., cut lengths	1.86c

Wire Products

(Prices apply on carload lots. Mixed carloads 10 cents higher with 10% discount off extras; joint carloads 10 cents higher with no discount from extras; pool carloads 20 cents up; less carloads 30 cents up.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.85
Cement coated nails	1.85
Galvanized nails	3.35

(Per pound)

Polished staples	2.55c
Galvanized fence staples	2.80c
Barbed wire, gal.	2.35c
Annealed fence wire	2.25c
Galvanized wire	2.60c
Woven wire fencing (base column, c.l.)	$50.00

(To Manufacturing Trade)

Plain wire, 6-9 ga.	2.10c
Spring wire	3.10c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Cold-Finished Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	1.70c
20,000 to 59,999 lbs.	1.65c
6,000 to 99,999 lbs.	1.60c
100,000 lbs. and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c.

Shafting

Cumberland, Md., base

1⅛-inch	3.00c
1⅛ to 1½-inch	2.50c
1⅝ to 1⅞-inch	2.20c
2⅛ to 6-inch	2.05c

Alloy Steel

Hot rolled, f.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O. Base 2.45c to 2.65c. Differentials to various classes of consumers.

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.30
2500	2.25	3400	3.20

4100 .15 to .25 Mo.	0.50
4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
5100 .80-1.10 Cr.	0.45
5100 Cr. spring	0.20
6100 bars	1.20
6100 spring	0.95
Cr., Ni., Van.	1.50
Carbon van.	0.95
9250 (flats)	0.25
9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16-in. wide, Pitts.	1.45c
Do., Chicago	1.55c
Do., del. Phila.	1.76c
Do., del. N. Y.	1.80c
Cooperage hoop, Pittsburgh	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold-rolled strip, Pitts., Cleve.	1.80c to 2.00c
Worcester, 3 tons or over	2.10c

Rails, Track Material

Stand. rails, mill	$40.00
Relaying rails, Pitts., 20-45 lbs.	$20.00 to 22.00
50 to 75	$16.00 to 18.00
80 to 100	$20.00 to 21.00
Light rails, 25-45, mills	$30.00
Light rails, Chi.	$32.00
Angle bars, mills	2.55c
Spikes, R. R. mills	2.15c
Spikes, boat, b'ge, Pitts.	2.65c
Track bolts, Chi.	3.50c
Do., stand., job.	73 off list
Tie plates, Pitts.	$35.00
Tie plates, Chi.	$35.00

Rivets, Wrought Washers

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chi.	2.35c
7/16-in. & smaller, Pitts., Chi., Cleve.	70, 10 and 10 off
Washers, c.l., Pitts. dist.	6.50 to 6.75 off
Do., Chi. dist.	7.25 to 7.00 off

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	75 off
Rolled thread ½ x 6 and smaller	75 off
Eagle list	75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	75 off
Tire bolts	60 and 10 off

Stove bolts, 75, 25 and 10 off in pkgs.; 86 off in bulk, 5000 or more of a size.

Rolled thread machine bolts, ½ x 6 and smaller 75 off.

NUTS

Semifinished	75 off

HEXAGON CAP SCREWS

Milled	85-10 off
Upset 1-in. diam., smaller	85-10 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	75-10-10 off
Headless set screws	80 off
Upset, larger than 1-in.	80 off

Cut Nails, Piling

Cut nails, c.l., Pitts.	$2.50
Do., less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05

*Steel piling, Pitts. 1.90c to 1.95c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads, Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD
Steel

In.	Blk.	Gal.
¼ and ⅜	60½	42
½	65½	54
¾	69	59
1—3	71	62

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD
Steel

2	66	57
2½ to 6	69½	60½
7 and 8	68	58
9 and 10	67	57
11 and 12	66	56

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½
9—12	38	24½

(*Please turn to next page*)

LINE PIPE

Steel

1 to 3 butt	70
2 lap	65
9—10 lap	66

Iron

⅛—1½ inch, black and galv take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe list. 8—12 inch no extra. 2-inch line discount unchanged from list prior to April 15, 1933.

Discounts on steel and iron pipe are net.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		*Charcoal Iron*	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Quantity discounts same as for hot rolled, below. Charcoal Iron—Under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

100 ft. or 150 lbs.	40%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$32.00-33.00
4-in. Birm.	35.00-36.00
4-in. Chicago	43.40-44.40
6 to 24-in. Chicago	40.40-41.40
6-in. & over, N. Y.	32.00-34.50
4-in. New York	34.50-36.50

Class A pipe $3 higher than Class B.

Stand. fitgs., Birm. base...$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4, 1932. Asterisk denotes price change this week

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago, furnace	$15.50
Pitts., dist. fur.	15.00
Pittsburgh, del.	15.63-16.13
Valley furnace	14.50
Cleve. fur., local del.	15.00
Philadelphia del.	14.26
Virginia furnace	17.25
Granite City, Ill.	16.50-17.00
Buff., fur., local del.	16.00
Buff., all-rail, Bost.	18.91-19.91
Do, Brooklyn	18.90
Do, Newark	17.28
Ala., Bir. fur., local	11.00
Ala., Nor. del., Bir.	10.00
Ala., del. Chicago	16.01
Ala., del. St. Louis	14.42
Ala., del. Cincinnati	13.82
Ala., Phila., dock del.	15.00-15.25
Ala., Balt., dock del.	15.00
Ala., N. Y. dock	15.50
Ala., Bost. dock del.	15.75-16.75
Tenn., Bir. base	13.00
Tenn., del. Cinci	13.82
Montreal, del.	23.00-23.50
Toronto, del.	22.10

FOUNDRY, No. 2X

Buff., fur., local del.	16.50
Buff., all-rail, Brook.	19.40
Do, Newark	17.78
Buff., all-rail, Bost.	19.91-20.91
Virginia furnace	17.75
Eastern, del. Phila.	14.51

FOUNDRY, No. 1X

Buff. fur., loc. del.	17.50
Eastern, del. Phila.	14.76

MALLEABLE

Valley furnace	14.50
Cleve. fur., loc. del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, del.	15.63-16.13
Chicago, furnace	15.50
Buff., fur., loc. del.	16.50
Eastern Pa., del.	15.13-18.91
Granite City, fur.	16.50-17.50
Montreal, del.	24.00
Toronto, delivered	22.60

BASIC

Pitts., dist. fur.	14.00
Pittsburgh, del.	14.63-15.13
Eastern Pa., del.	14.00-14.25
Buff. fur., loc. del.	15.50-16.00
Montreal, del.	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	15.00
Pittsburgh fur.	15.50
Pittsburgh, del.	16.13-16.63

LOW PHOS.

Valley, fur., stand.	25.00
Phila., standard	22.76-25.79
Copper bear., E. Pa. furnace	20.50-21.50

GRAY FORGE

Valley furnace	14.50
Pitts. dist. fur.	15.00
Pittsburgh, del.	15.63-16.13

CHARCOAL

Lake Sup., del. Chi.	23.04

SILVERY

Jackson County, O., fur. 6%—$18.00; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19; 15—$21 to $23.

BESSEMER FERROSILICON

Jackson County, O., fur., 10%—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.80
Mesabi bessemer	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63%, con. (nom.)	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nom.)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.00
No. Afr. low phos.	7.00
Swedish basic, 65%	7.50- 8.00
Swedish low phos.	8.00
Spanish, No. Afr. basic, 50 to 60%.	7.00
Tungsten, spot, sh. ton unit, duty pd.	$9.65- 9.90
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton c.i.f.	$15.50-16.50

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	nominal
So. African, 52%	18 to 19 cts.
So. Afr., 49-51%	nominal
Indian, 48-50%	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Ala.	$35.00
Missouri	32.00

Second Quality

Pa., Ohio, Ill., Ky., Md.	25.00-30.00
Missouri	26.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet, E. Chicago	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Fluorspar

85 to 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$10.50
Washed gravel, import duty paid tide, gross ton	16.50

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess.	$26.00
Philadelphia	31.75
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00

SLABS

*Pitts., Cleve., Yong.	24.00-26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts.	1.50c-1.60c

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville fur.	$1.75
Connellsville fdry.	2.25- 2.50
Connell. prem. fdry.	4.00
New River fdry.	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21- 8.81
Chi. ov., outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.	7.75
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, ovens Connell. basis	4.50
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82% tidewater, duty pd. (con.)	‡$68.00
del. Pitts. (con.)	‡73.21
Spiegeleisen, 19-20%, dom. fur., spot†	24.00
Ferrosilicon, 50%, freight all., c. l.	74.50
Do, less carload	82.50
Do, 75 per cent	120-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
Ferrotungsten, stand., lb. cont.	0.94- 1.00
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, c. l. 17-19%, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic per ton c. l., 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads. Diff. to apply to quantity. ‡Spot, $7 less.

Bars

Many Consumers Cover Larger Requirements — Demand from Automotive Campanies Leads

BAR PRICES, PAGE 33

Pittsburgh—A number of small inquiries have come into the market recently for merchant and alloy bars. Orders have been increasing, especially from the automotive industry.

An independent mill interest here has had heavier schedules the past week for its 12 and 18-inch merchant bar mills. The Duquesne, Pa., works of Carnegie Steel Co., after beginning with three open-hearth furnaces last week following six weeks' shutdown has added another open-hearth furnace. Merchant bars are quoted 1.60c base, Pittsburgh, and alloy bars are 2.45c to 2.65c.

Cleveland—Substantial improvement in steel bar requirements is noted. The automotive industry has increased orders and miscellaneous tonnages are heavier and more numerous. The volume of bookings and shipments so far this month far exceeds early March. Carload shipments have gained, consumers anticipating requirements farther ahead. Bar sellers are sharing improved demand incident to beer distribution, principally in construction of trucks, and also in the use of angles for beer cases. Less tendency is manifest toward concessions on larger tonnages below 1.65c, base, Cleveland.

Chicago—Automotive requirements continue to provide the best outlet for steel bars although demands of miscellaneous consumers have been more active recently and total business has been at the best rate so far this year. Farm implement manufacturers have made little change in specifications, which are light. Prices are steady, the market generally being 1.70c, Chicago.

Philadelphia — Commercial steel bars are moving at the rate of the past two or three weeks. Prices are 1.60c, Pittsburgh, or 1.91c, Philadelphia. Common iron bars are moving slowly at 1.50c, Pittsburgh or 1.81c, Philadelphia.

Canmakers' Specifications Sustain Tin Plate Rate

Tin Plate Prices, Page 33

Pittsburgh—The average of tin mill operations remains at 45 per cent, and is being maintained on specifications from canmakers for immediate shipment. Firm observance to 2.75c for long ternes is noted, with the tin plate price remaining $4.25 per base box.

Philadelphia—Tin plate specifications are coming out more freely and one eastern mill has stepped up its operations appreciably. In addition to better specifications from canmakers, fairly good tonnage is being consumed for beer bottle caps.

Cold-Finished Gains on Larger Automotive Needs

Cold Finished Prices, Page 33

Pittsburgh — Owing to improvement in automotive schedules, shipments of cold-finished steel bars for that use are maintained at a fair rate. April apparently is recouping all of the loss of March. The price of cold-finished steel is based on 1.70c, Pittsburgh.

Plates

Improvement in Demand Follows Activity in Many Lines— Most Lots for Small Tonnage

PLATE PRICES, PAGE 33

Pittsburgh—Probably 1500 tons of plates will be needed for two superdredges for which the United States engineers will receive bids at Memphis, Tenn., until April 26. Mill business in plates still is running to miscellaneous lots.

In some cases 1.60c, Pittsburgh, is quoted but 1.50c, Pittsburgh, or less on an eastern base is being done.

Cleveland—The market is more active, with demand improved in tonnage and the number of orders, principally miscellaneous. Requirements for beer tanks have not developed as fully as anticipated, though some small orders have been placed. Boilermakers are taking more material. Though plates have been steady at 1.60c, base, Pittsburgh, for the usual run of moderate size requirements, 1.50c to 1.55c have been done.

Chicago—No large lots generally are appearing in plate orders and new inquiries for fabricated work in most instances are small. Some additional tonnage has been placed for brewery equipment with a fair volume in prospect.

Boston—Plate prices are irregular and while some business is booked at 1.50c to 1.60c, Coatesville, Pa., 1.40c is frequently done.

New York—General plate business has slowed up, with some fair brewery business outstanding. Stainless steel tanks and vats will be required for a $400,000 improvement to a brewery in Newark, N. J., recently purchased by John F. Trommer Inc., a Brooklyn brewer.

Philadelphia—Plate sellers are focusing attention on the distribution of more than 600 tons by Pusey & Jones Co., Wilmington, Del., recently noted as having received the contract for construction of a ferryboat for the Virginia Ferry Corp. Possibly the largest individual plate tonnage is about 3500 tons for gas holder work for the Philadelphia Gas Co., but action is not considered likely soon. Bids are being compiled by the Central Supply Co., Philadelphia, on 100 hopper and 50 gondola car repairs for a coal road.

Contracts Placed

280 tons, two-thirds plates, oil barge for Dwyer Bros. Lighterage Co., New York, for operation by Ulster Oil Transport Co., an affiliate, to Dravo Contracting Co., Pittsburgh.

220 tons, 68 vats and tanks for Lafayette Brewery Inc., Lafayette, Ind., to Chicago Bridge & Iron Works, East Chicago, Ind.

150 tons, tanks for New York Dock Co., Brooklyn, N. Y., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

100 tons, 16 tanks for Metropolitan water district, Los Angeles, to Western Pipe & Steel Co., Los Angeles.

Unstated tonnage, ten 800-barrel tanks for Berghoff Brewing Corp., Ft. Wayne, Ind., to S. F. Bowser Co., Ft. Wayne, Ind.

Contracts Pending

1500 tons, estimated, two 244 x 52 x 9 foot superdredges for service on the lower Mississippi river; bids April 26 by Memphis, Tenn., federal engineers. Dredges are similar in design to the POTTER and OCKETSON, constructed in 1932 by Dravo Contracting Co., Pittsburgh.

125 tons, dredge pipe for United States engineer, Philadelphia, specifications expected out soon.

100 tons, estimated, tank for Ingham, Mass.; Pittsburgh-Des Moines Steel Co., Pittsburgh, low.

Unstated tonnage, stainless steel, for tanks and vats, brewery in Newark, N. J., being remodeled by John F. Trommer Inc., Brooklyn brewer.

Railroads

Erie Buys 24,549 Tons Rails; Roads Offer Scrap Exchange

Track Material Prices, Page 33

Purchase of 24,549 tons of rails by the Erie has given some life to the market and is followed by an inquiry for fastenings, estimated more than 4000 tons. The New York Central has authorized the purchase of 9000 tons of rails with early distribution expected. The Erie tonnage was distributed as follows: Carnegie Steel Co., 16,049 tons; Illinois Steel Co., 4500 tons; Inland Steel Co., 2000 tons; Bethlehem Steel Corp., 2000 tons. Mills at Chicago and Pittsburgh already have scheduled rail rollings on the Erie's order and other business already on books. This is the first activity of the Edgar Thomson rail mill at Pittsburgh since October.

The Missouri Pacific is in the market for 7000 tons of tie plates. About 160 tons of rails will be required for a track system at the marine base at Quantico, Va. W. C. Spratt, Fredericksburg, Va., is low on the general contract.

Railroads are increasingly attempting to exchange heavy melting steel scrap for standard rails, the Pennsylvania being named as one road now negotiating such a trade.

Rail Orders Placed

Erie, 24,549 tons, 16,049 tons to Carnegie Steel Co., 4500 tons to Illinois Steel Co., 2000 tons each to Inland Steel Co. and Bethlehem Steel Corp.

Rail Orders Pending

New York Central, 9000 tons; purchase authorized.

Car Orders Pending

Central Supply Co., Philadelphia, 100 hopper cars and 50 gondola cars; bids being compiled.

Strip

Heavier Specifications from Automotive and Other Users

Strip Prices, Page 33

Pittsburgh—Strip steel orders are heavier. An independent producer in this district put on three mills April 13 and has so far shown more activity than in the entire month of March. Specifications are coming from a variety of sources and aside from improved automotive tonnage. Hot-rolled strip is being based generally on 1.45c, Pittsburgh, but cold-rolled strip ranges widely and is easy at 1.80c to 2.00c. One strip mill in this district reports receiving orders for four carloads of hoops for beer kegs recently.

Cleveland—Improvement in strip releases and new orders are providing mills with much better operating schedules. General Motors units, Ford and Chrysler, and partsmakers, have placed additional business for early shipment. Miscellaneous demands also have increased, including requirements for beer-keg hoops and beer cases. The buying "wave" is described by some sellers as larger than that which occurred in February, preceding the bank holidays. Cold-rolled strip holds at 1.80c to 2.00c, base, Cleveland; and hot-rolled at 2.00c, base, Pittsburgh.

Chicago—Strip specifications increased moderately during the past week with automotive requirements furnishing a large portion. Strip mills are receiving some orders for material to be used in beer barrel and case manufacture. Prices are steady, hot strip continuing 1.55c, with cold-rolled strip usually 1.90c to 2.00c.

Philadelphia—Strip steel is featureless with cold-rolled holding generally at 1.90c, Pittsburgh, or 2.21c, Philadelphia, and hot-rolled at 1.45c, Pittsburgh, or 1.76c, Philadelphia.

Wire

Improvement in Inquiry Is Steady from Most Industries

Wire Prices, Page 33

Pittsburgh—Wire product specifications sustain the mild improvement noticeable two or three weeks ago. Much of the buying is from warehouse stocks. In general, prices are without change, nails $1.85 a keg, plain wire 2.10c, Pittsburgh. Shipment of wire products to down-river points is showing more volume with several tows by a leading mill here being planned for April.

Cleveland — Manufacturers and other wire consumers are anticipating their requirements farther ahead than for some months, instead of relying upon immediate shipment from mills. In barbed wire deliveries now cannot be given in the majority of cases short of a week or ten days. Plain wire is continued firm at 2.10c, and standard wire nails at $1.85.

Chicago—Heavier orders from the automotive industry are increasing demand for wire products, while the movement in agricultural areas also has been more active recently. Miscellaneous demand for manufacturers' wire shows occasional gains with the market generally steady at 2.15c. Wire nails are $1.90 in carloads. Wire mill operations continue around 25 per cent.

Worcester, Mass.—Wire specifications are slightly heavier and some specialties are in fair demand, but buying is not brisk. Recent imports of galvanized wire, rods and rope have been heavier. Plain wire at New England mills is steady at 2.20c, Worcester.

Coke

Demand Still Lags Behind Other Raw Materials

Coke Prices, Page 34

Only Chicago and St. Louis report foundry coke demand improved, reflecting betterment in other raw materials. In both districts, April shipments will show a fair gain over March.

Heavier demand for heating coke is anticipated at Chicago prior to May 1, when the price advances.

Coke prices generally are unchanged on the basis of $7, ovens, for outside delivery of by-product foundry at Chicago; $1.75 for beehive furnace coke, Connellsville, in the Pittsburgh district; $2.25 for common brands of beehive foundry at Pittsburgh, and $2 to $2.15, Connellsville, for metallurgical coke in the eastern market.

Two tows of 5000 tons each of soft coke were moved last week from Nemacolin, Pa., to Youngstown, O., over the new river-rail terminal at Colona.

Ferroalloys More Active

Ferroalloy Prices, Page 34

Increased steelmaking operations have stimulated specifications for ferromanganese. Prices continue $61, duty paid, for spot material, with the contract price $68, duty paid. Canada has reduced its customs valuation for ferromanganese from $55 per ton, f.o.b. point of production, established Oct. 6, 1931, to $50. Domestic spiegeleisen, 19 to 21 per cent, is $24, furnace, on spot shipments. An order for 25,000 pounds of ferrotungsten has been placed at Pittsburgh for delivery to a Mid-west consumer at a price reported to be around $1.

Pipe

Market More Active—4000 Tons Placed for Pipe Line—Wrought Iron Pipe Prices Reduced

PIPE PRICES, PAGE 33

Pittsburgh—National Tube Co., Pittsburgh, and Youngstown Sheet & Tube Co., Youngstown, O., have divided an order for 4000 tons of 6⅝-inch steel pipe for the Pure Oil Co., Chicago. The line is to be built from Toledo, O., to Detroit.

The recent reduction in standard steel pipe prices has not developed much new buying.

Iron pipe producers have issued new cards of extras, the A. M. Byers Co.'s card being dated April 15. All discounts have been increased on black and galvanized butt and lap-weld pipe. New discounts on iron line pipe are based on the standard pipe discounts.

Chicago—Cast iron pipe is showing the best demand for the year to date. The recent award of 10,000 tons for the Chicago pumping station has been followed by a fair gain in miscellaneous inquiries for small lots and a few additional orders. New awards include 450 tons for Duluth and 275 tons for Youngstown, O. Prices are fairly steady except on the largest lots. Quotations on the Chicago tonnage were reported by the city the lowest since 1914.

Boston—Including purchases by Manchester, N. H., and Milton, Mass., close to 1000 tons of cast pipe was placed during the week. Inquiry shows seasonal improvement, but continues below normal.

New York—Following the recent sharp reduction in steel pipe, producers of wrought iron pipe have reduced prices $11 to $40 a ton, depending upon size. This is the most drastic cut in iron pipe in recent years. Sellers of steel and wrought pipe report no improvement in tonnage since the reductions were announced, but are confident greater stability will result. Local jobbers of steel pipe are issuing cards placing 1 to 3 inch black pipe on a basis of 61, delivered, which is in line with the mill cards. Eastern cast pipe foundries have stepped up operations following the recent moderate increase in volume. Montrose, N. Y., has purchased 2600 tons.

Buffalo—Demand for pipe is increasing. Several gas companies operating in western New York are expected to cover part of their season's requirements within the next 30 days. Large new wells are being brought in through this district.

Birmingham, Ala.—Awards are slow, and production comparatively light. A number of federal-aid projects still are pending.

Cast Pipe Placed

2600 tons, 6 to 16-inch, Montrose, N. Y., to R. D. Wood & Co., Philadelphia.

500 tons, 4 to 16-inch, Public Service Electric & Gas Co., Newark, N. J., to United States Pipe & Foundry Co., Burlington, N. J.

450 tons, 4 to 12-inch, Duluth, to James B. Clow & Sons, Chicago.

400 tons, 4 to 16-inch, Manchester, N. H., to R. D. Wood & Co., Florence, N. J.

850 tons, 6 to 16-inch, Milton, Mass., to Warren Pipe Co. of Massachusetts, Boston.

275 tons, Youngstown, O., to James B. Clow & Sons, Chicago.

150 tons, small sizes, Marblehead, Mass., to Warren Pipe Co. of Massachusetts, Boston.

Steel Pipe Placed

4000 tons, 6⅝-inch line to be built between Toledo, O., and Detroit for the Pure Oil Co., Chicago. Order divided between National Tube Co., Pittsburgh, and Youngstown Sheet & Tube Co., Youngstown, O.

Cast Pipe Pending

2650 tons, Torrance, Calif.; bids soon.

2365 tons, 4 to 14-inch, Florence water works district, Los Angeles; bids soon.

655 tons, 2 to 8-inch class 150 and 250, Oakland, Calif.; bids rejected.

650 tons, 8 to 12-inch, Leominster, Mass.

100 tons or more, Woonsocket, R. I.

Steel Pipe Pending

200 tons, 20-inch o.d. pontoon pipe, United States engineer Philadelphia; bids April 18.

Unstated tonnage, 74,600 feet, 12-inch down to ¼-inch, galvanized wrought iron or steel, Panama; bids April 28. Also 6700 feet, 6-inch and under, extra strong black wrought iron or steel.

Sheet Bars Easier in Some Districts; Billets Firm

Semifinished Prices, Page 34

Sheet bar are quoted $24 to $26, base, Pittsburgh, Youngstown, O., and Cleveland, the lower figure representing concessions developed in some quarters, but not yet general. Billets are holding at $26. A recent inquiry for several hundred tons was quoted $26. This latter negotiation implied a 100 per cent increase in the order if the billet base was shaded $1 a ton, but none of the sellers accepted the offer.

Warehouse

Demand Increasing Slowly; Prices Show Firmness

Chicago—Business gained further the past week, attributed to activities of the brewing industry. Requirements of other consumers are moderately heavier and the month's sales to date show an increase over March. The 15-cent extra on narrow widths of blue annealed sheets has been eliminated. Nos. 8 and 10 gage sheets up to 48 inches wide are quoted at 2.75c.

Pittsburgh—Sales improved in the past week, with some evidence of a belated spring buying movement. All prices are holding.

Cleveland—Warehouse sales so far this month are only slightly ahead of the comparable period in March.

New York—Inquiry for steel out of warehouse has improved and orders show a slight gain. Demand is well balanced and prices fluctuate less widely, especially on sheets, which are firmer.

Warehouse prices are unchanged from last week, except for removal of the 15-cent extra on narrow blue annealed sheets at Chicago. The usual table is omitted this week.

Philadelphia—While early this month there was a discussion as to a possible advance in sheets out of warehouse, it now appears definite there will be no change for the present. Trading since April 1 is better.

Baltimore—Warehouse prices have firmed the past fortnight, although there have been few actual changes in prices. Business has increased slightly.

Detroit—Warehouse business in iron and steel continues to show a steady but slow increase over the low point of March. The requirement per order remains small, but the general feeling is that continued though slow improvement is here.

Cincinnati—Demand for steel from warehouse has expanded only slightly this month. Prices have been altered to eliminate 3.20c quotation on No. 10 blue annealed wider than 48 inches.

St. Louis—Iron and steel warehouses report further moderate expansion in demand from the general manufacturing trade. Seasonal industries have increased buying, and in several instances supplies for balance of present quarter were engaged.

Structural Shapes

Market Quieter, and Awards Shrink—20,000 Tons Pending in Buffalo District—5000 Tons for Baltimore Railroad Pier Active—Pittsburgh Prices Firmer

STRUCTURAL SHAPE PRICES, PAGE 33

Pittsburgh—Among new projects which have come out for figures is a 1000-ton state prison at Dannemora, N. Y. Spooner Bridge Construction Co., Albany, N. Y., is low bidder for the 480-ton Susquehanna county, Pennsylvania, state bridge. This company also was low when the bridge was first bid last fall, but on the recent reopening was some $7000 higher. Firmness is noted in the plain material base of 1.60c, Pittsburgh, with concessions for tonnage lot to bridge shops limited to not more than $2 a ton. Efforts are being made to strengthen the steel sheet piling price, which at 1.95c, Pittsburgh, has been nominal on some recent jobs.

Cleveland—Shape fabricators expect their largest tonnage this year to develop from the railroads, principally in bridge repairs and replacement, where demand is known to be large and urgent. However, little is anticipated until the railroads' financial situation has improved. No state construction work has been bid this year. For a Cleveland Electric Illuminating Co. substation here 250 tons have been awarded. Plain material is steady at 1.60c, base, Pittsburgh.

Chicago—Structural work is an exception to the rising trend in demand for most steel products, with orders and inquiries holding to their previous low rate. Curtailment of public construction is reflected in the volume of recent inquiries.

Boston—Demand is restricted to a few small lots. Plans for the Saugus river bridge, Lynn, Mass., have been abandoned for this year. Plain material is untested at 1.60c, Pittsburgh.

New York—Structural steel inquiry continues to decline, and awards are light. Much federal government and other public work in the East is held in abeyance. Karl Koch Co., New York, will erect 2290 tons for the appraisers' stores, Baltimore.

Specifications are expected out before May 1 on 14,000 tons of shapes for the Catskill bridge over the Hudson river.

Philadelphia — Specifications are expected out this week for the 5000-ton pier project for the Pennsylvania railroad in Baltimore. Erwin & Leighton, Philadelphia, have the general contract for adding two stories to the federal reserve building here for which a fairly good tonnage will be required. Other pending projects include a packing plant for J. J. Felin, this city, requiring 500 tons. Standard shapes are unchanged at 1.65c, delivered, Philadelphia, with special sections taking a premium of $2 a ton.

Buffalo—The outlook for structural steel demand is improving. With the Grand Island bridges, the Gowanda state hospital, the Buffalo postoffice and other projects active, 20,000 tons are pending in Erie county, New York.

Contracts Placed

825 tons, three brewery buildings, Milwaukee, for Pabst Brewing Co.; 725 tons to Lakeside Bridge & Steel Co., North Milwaukee, Wis.; 100 tons to Heil Co., Milwaukee.

450 tons, blending plant for Six Companies Inc., Boulder City, Nev., to Consolidated Steel Corp., Los Angeles.

360 tons, sanitarium, Brooklyn, N. Y., to Montgomery Iron & Steel Co., New York.

300 tons, reformatory, Taft, Okla., to Capitol Steel & Iron Co., Oklahoma City, Okla.

300 tons, mess hall and school building, United States reformatory, El Reno, Okla., to Capitol Steel & Iron Co., Oklahoma City; H. W. Underhill Construction Co., Oklahoma City, general contractor. Concrete Engineering Co. awarded concrete reinforcing bars, metal pans and mesh.

271 tons, Temple street bridge, Los Angeles, to Consolidated Steel Corp., Los Angeles.

270 tons, Cascade laundry, Brooklyn, N. Y., to Joseph T. Ryerson & Son Inc., New York.

260 tons, state bridge, Sedgewick county, Kansas, to Kansas City Structural Steel Co., Kansas City, Mo. Reported last week as 200 tons.

250 tons, substation, Cleveland Electric Illuminating Co., Cleveland, to American Bridge Co., Pittsburgh; through Hunkin-Conkey Construction Co., Cleveland.

250 tons, structural steel and ornamental iron, addition to postoffice, Jersey City, N. J., to Selbach-Meyer Co., West New York, N. J.; Joseph Jewkes & Sons Co., Jersey City, contractors. Reinforcing steel awarded to George Peterson Inc., Harrison, N. J.

230 tons, storage building, Gerhard-Lang Brewing Co., Buffalo, to R. W. McManus Co., Buffalo.

225 tons, grillages, New York Central viaduct, Westide, Manhattan, New York, to American Car & Foundry Co., New York.

175 tons, highway bridges, Missouri, to Stupp Bros. Bridge & Iron Co., St. Louis.

154 tons, Sunset boulevard bridge, Los Angeles, to Consolidated Steel Corp., Los Angeles.

150 tons, piling, Milwaukee, lighthouse, to Inland Steel Co., Chicago.

150 tons, highway bridge, Tarrant county Texas, to North Texas Iron & Steel Co., Fort Worth, Tex.

145 tons, repairs, Riverside viaduct, New York, to McClintic-Marshall Corp., Bethlehem, Pa.

135 tons, Avenue of Flags, Century of Progress, Chicago, to Gage Structural Steel Co., Chicago.

130 tons, highway bridge, Metaline Falls, Wash., to Virginia Bridge & Iron Co., Roanoke, Va.

125 tons, printers' home, Colorado Springs, Colo., to E. Burkhardt & Sons Steel & Iron Works, Denver.

120 tons, highway bridges, Nebraska, to Omaha Steel Works, Omaha.

120 tons, Church of Our Lady of Refuge, Brooklyn, to Bethlehem Fabricators Inc., Bethlehem, Pa.

105 tons, postoffice, Greenville, Pa., 50 tons of shapes, to Pittsburgh Bridge & Iron Works, Pittsburgh; 55 tons, concrete bars, to Jones & Laughlin Steel Corp., Pittsburgh; Cook-Anderson Co., Beaver, Pa., contractor.

100 tons, school, Florham, N. J., to Selbach-Meyer Co., West New York, N. J.

Shape Awards Compared

	Tons
Week ended April 15	5,215
Week ended April 8	8,545
Week ended April 1	21,594
This week in 1932	7,700
Average weekly, 1932	14,285
Average weekly, 1933	9,917
Average weekly, March	12,610
Total to date, 1932	225,790
Total to date, 1933	158,671

Contracts Pending

9000 to 10,000 tons, Bohemian club, San Francisco; bids April 15.

5000 tons, Pennsylvania railroad piers, Baltimore; specifications expected out this week.

2000 tons hospital building, University of Maryland, Baltimore; Consolidated Engineering Co., Baltimore, low for general contract.

1000 tons, postoffice, Phoenix, Ariz., Great Lakes Construction Co., Chicago, low.

1000 tons, buildings, Clinton prison, Dannemora, N. Y.

735 tons, ward for General hospital, San Francisco; bids postponed from April 5 to June 14.

500 tons, cell blocks and utilities building, United States Southwestern reformatory; Worsham Bros., Knoxville, Tenn., low for steel cells; Murch Bros. Construction Co., St. Louis, low for concrete cells.

260 tons, Raisch apartments, San Francisco; bids being taken.

235 tons, grade crossing elimination, Unadilla, N. Y., for Delaware & Hudson railroad.

216 tons, bridges, Columbia and Glades counties, Florida, bids April 21.

150 tons, alterations to garage, Rice Baking Co., Baltimore.

120 tons, reconstruction of Charles street bridge, Jones Falls, Baltimore; Pecora & Gaskill, Baltimore, low for general contract.

100 tons, shapes and bars, postoffice, Bradentown, Fla.; Murch Bros. Construction Co., St. Louis, low.

Unstated tonnage, 2-story addition, Federal Reserve bank, Philadelphia; Erwin & Leighton, Philadelphia, general contractors.

Equipment

Inquiries Moderately Better; Orders Slow To Close

Pittsburgh—United Engineering & Foundry Co., Pittsburgh, announced last week contract to supply a new high-speed flying shear for light gage cold-rolled strip steel (see page 30). The shear will be supplied to one of the tin plate mills. A lull has been evidenced in purchases of steel mill equipment for which mills in this district have asked figures.

In referring to the new "sized hot-rolled" bars or "precision rounds" in this department of the April 3 issue, tolerances on this material should have given as plus or minus 0.003-inch.

Chicago—Inquiry for equipment is moderately more active, while sales are increasing at a relatively slower rate. What purchases are appearing usually involve only small lots and few large lists of equipment are pending. Buyers of small tools usually seek used equipment, of which there is a fairly large supply.

Worcester, Mass.—Continued dullness prevails in machinery building shops where part-time operations still hold. Bids close April 25 on five automatic screw machines for delivery to the Newport, R. I., navy yard.

New York—Demand for equipment continues light. No sizable lists are out. Some eastern railroads are offering used tools at greatly reduced prices, but used equipment meets little demand.

Additional awards by the navy department include a large engine lathe to the Consolidated Machine Tool Corp. of America; milling machine, to Kearney-Trecker Corp.; and a grooving machine to the Hallidie Machinery Co. Bids close on another list April 25, including three lathes and several milling machines.

Concrete Bars

Tonnage Continues to Decline, with Public Work Throughout the Country Still in Abeyance—Light Inquiry in All Districts for Private Building Projects

REINFORCING BAR PRICES, PAGE 33

Pittsburgh—Opening of bids by the Richmond Bridge Corp., Richmond, Va., on 2750 tons of concrete bars which it was expected to buy April 10 and 11 was postponed. A project at Pearl Harbor, Hawaii, estimated to take 1500 to 1600 tons of bars, is being figured by contractors in the East. New billet steel bars hold at 1.40c, Pittsburgh, on mill lengths. Cut lengths are fairly steady at 1.55c, Pittsburgh.

Cleveland—The market is quiet, with few awards and 130 tons for a Cuyahoga county sanitation project still pending. At Columbus, O., 400 to 500 tons pend for the postoffice; and at Cincinnati, 400 tons for a sewer project. Concrete bar prices here are untested.

Chicago—Reinforcing bars continue slow, inquiries and awards having shown practically no improvement over the past several weeks. A moderate tonnage is pending for road work in this and nearby states.

New York—Concrete reinforcing bars are dull with prices untested. Rail steel is unchanged at 1.30c, eastern mill, but demand is light. Bids are in on several hundred tons of mesh for the Jones beach parking space, Long Island. Little new tonnage is coming out.

Philadelphia—A slight improvement is noted in concrete bar demand, Kalman Steel Corp., Bethlehem, Pa., booked 120 tons for a filtration plant at Pottstown, Pa. Billet bars in cut lengths are holding at 1.55c, Pittsburgh, in car lots, or 1.86c, delivered, Philadelphia.

Contracts Placed

450 tons, Silver Lake, Sunset and Temple street viaducts, Los Angeles, to unnamed interest.

181 tons, for San Quentin, Calif., to Pacific Coast Steel Corp., San Francisco.

120 tons, filtration plant, Pottstown, Pa., to Kalman Steel Corp., Bethlehem, Pa.; through F. H. Keiser & Co., Pottstown, Pa., general contractors.

Contracts Pending

5000 tons, James river bridge and viaduct, Richmond, Va.; S. M. Siesel Co., Milwaukee, low for general contract.

1500 tons, naval project, Pearl Harbor, Hawaii.

500 tons, Pine Canyon dam, Pasadena, Calif.; bids April 18.

425 tons, Chevy Chase reservoir, Glendale, Calif.; Pacific Coast Steel Corp., Los Angeles, low.

350 tons, sewer, Avenue L, Brooklyn, N. Y.

300 tons, hospital building, University of Maryland, Baltimore; Consolidated Engineering Co., low for general contract.

200 tons, ward for General hospital, San Francisco; bids postponed from April 5 to June 14.

125 tons, 2-story addition to the Federal Reserve bank building, Philadelphia, Erwin & Leighton, that city, general contractors.

100 tons, bridges and highways, Columbia and Glades counties, Florida; bids April 21.

100 tons, armory, San Jose, Calif.; bids April 18.

100 tons, bridge for city, San Jose, Calif.; bids soon.

Concrete Awards Compared

	Tons
Week ended April 15	751
Week ended April 8	1,709
Week ended April 1	1,842
This week, 1932	8,206
Average weekly, 1932	3,920
Average weekly, 1933	3,198
Average weekly, March	3,425
Total to date, 1932	75,325
Total to date, 1933	51,164

Bolt, Nut Buying Quiet; Shipments Show Some Gain

Bolt, Nut, Rivet Prices, Page 33

Buying of bolts and nuts generally is less than in March but specifications are larger and shipments exceed the comparable period of March. Automotive requirements lead, Chevrolet, Chrysler and Ford specifying well.

Jobbers, except those in the Northwest, are not taking much stock. Railroads are buying little but an inquiry for track bolts for the Erie is expected. Some small lots have been taken by agricultural implement builders.

Prices are steady at 75 off for bolts and nuts. Large rivets are steady at 2.25c, Pittsburgh, and 2.35c, Chicago.

Scrap

General Advance Caused by Buying and Scarcity in Some Grades—Exports Heavier

Pittsburgh—The market awaits buying by a leading interest here of needed No. 1 steel. In the meantime, dealers are not considering taking anything less than $10 orders for this grade and a sale of 1000 tons at $10.25 has raised the market 25 cents to a range of $9.75 to $10.25. No. 2 steel and turnings continue active, and with the purchase last week of some trial carloads of No. 2 steel for Toronto, O., another outlet point has developed, the price being $9 in this instance. One mill in this district continues to pick up turnings in small lots but an order at $7 is believed to have been issued by another mill here. Following announcement of the Weirton Steel Co.'s purchase of Southern railway scrap comes word that about 8000 tons from the same

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.50 to 7.00
Boston, dealers	3.50 to 3.75
Buffalo, No. 1	**7.00 to 7.25**
Buffalo, No. 2	**6.00 to 6.25**
Chicago	5.50 to 6.00
Cleve., No. 1	7.00 to 7.50
Cleve., No. 2	6.00 to 6.50
Det., No. 1 deal.	5.50 to 6.00
Det., No. 2 deal.	5.00 to 5.50
E. Pa. del. mill	6.50
E. Pa., No. 2 del.	**5.00 to 5.50**
Federal, Ill.	6.00 to 6.50
Granite City, Ill.	5.50 to 6.00
N. Y., deal. R. R.	5.00
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	9.75 to 10.25
Pitts. No. 1 R. R.	10.25 to 10.75
St. L. No. 1 sel.	6.00 to 6.50
Valleys, No. 1	9.00 to 9.50

COMPRESSED SHEETS

Buffalo, dealers	**6.00 to 6.25**
Chi. (Factory)	4.00 to 4.50
Cleveland	6.50 to 7.00
Detroit, dealers	5.00 to 5.50
E. Pa. new mat.	**5.00 to 6.00**
Pittsburgh	9.00 to 9.50
Valleys	8.50 to 9.00

BUNDLED SHEETS

Buffalo	4.00 to 4.50
Cincinnati, del.	4.25 to 4.75
Cleveland	4.50 to 5.00
Eastern, Pa.	5.00
Pittsburgh	8.00 to 8.50
St. Louis	2.00 to 2.50

SHEET CLIPPINGS LOOSE

Chicago	2.00 to 2.50
Cincinnati	1.75 to 2.25
Detroit, dealers	1.75 to 2.25
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	8.00 to 8.50
Boston, dealers	3.50 to 3.75
Buffalo	9.50 to 10.00
Chicago (3 ft.)	8.00 to 8.50
Chicago (2 ft.)	8.50 to 9.00
Cincinnati, del.	8.50 to 9.00
Detroit, deal.	8.50 to 9.00
Pitts. (open-hearth, 3 ft. and less)	10.00 to 10.50
St. Louis	7.00 to 7.50

STOVE PLATE

Birmingham	5.00 to 6.00
Boston, dealers	**2.00 to 2.50**
Buffalo	**7.00 to 7.25**
Chicago, net	5.00 to 5.50
Cinci., deal. net	3.50 to 4.00
Det., net deal.	2.50 to 3.00
Eastern Pa.	**5.50 to 6.00**
N. Y., deal. mill	2.50 to 3.00
St. Louis	5.50 to 6.00

COUPLERS, SPRINGS

Buffalo	8.50 to 9.00
Chicago	7.00 to 7.50
Eastern Pa.	8.50 to 9.00
Pittsburgh	10.25 to 10.75
St. Louis	6.00 to 6.50

ANGLE BARS—STEEL

Chicago	7.00 to 7.50
St. Louis	5.75 to 6.25

LOW PHOSPHORUS

Buffalo, billets and bloom crops	8.50 to 9.00
Cleveland bil. and bloom crops	10.00 to 11.00
Eastern Pa.	10.00 to 10.50
Pittsburgh billet bloom crops	11.00 to 11.50
Pitts., sheet bar crops	11.00 to 11.50

FROGS, SWITCHES

Chicago	5.50 to 6.00
St. Louis	5.50 to 6.00

SHOVELING STEEL

Chicago	5.50 to 6.00
Cleveland	5.75 to 6.00
St. Louis	5.00 to 6.00

RAILROAD WROUGHT

Birmingham	6.00 to 7.00
Boston, dealers	1.00 to 1.50
Buffalo, No. 1	**4.25 to 4.75**
Buffalo, No. 2	**7.00 to 7.25**
Chi., No. 1, net	4.50 to 5.00
Chicago, No. 2	5.50 to 6.00
Cinci., No. 2	5.25 to 5.75
Eastern Pa.	6.50 to 7.50
N. Y., No. 1, deal.	2.50 to 3.00
Pitts. No. 1	9.50 to 10.00
St. Louis, No. 1	3.50 to 4.00
St. Louis, No. 2	**5.00 to 5.50**

SPECIFICATION PIPE

Boston	3.00 to 4.00
Eastern Pa.	**6.00 to 7.00**
N. Y., deal	2.00 to 2.25

BUSHELING

Buffalo, No. 1	**6.00 to 6.25**
Chicago, No. 1	4.00 to 4.50
Cinci., No. 1 deal.	4.25 to 4.75
Cinci., No. 2	2.50 to 3.00
Cleve., No. 2	**4.00 to 4.50**
Det., No. 1 new deal.	4.25 to 4.75
St. L., No. 1	3.00 to 3.50
Val. new No. 1	8.50 to 9.00

MACHINE TURNINGS

Birmingham	2.50 to 3.00
Boston, dealers	0.75 to 1.00
Buffalo	**3.75 to 4.25**
Chicago	**3.25 to 3.75**
Cinci., deal	3.00 to 3.50
Cleveland	**4.00 to 4.25**
Detroit	3.00 to 3.50
Eastern Pa.	3.50 to 4.00
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.75 to 7.25
St. Louis	1.50 to 2.00
Valleys	6.75 to 7.25

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	0.75 to 0.90
Buffalo	**3.00 to 3.50**
Cinci., deal	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	3.75 to 4.25
Eastern Pa.	3.50 to 3.75
N. Y., deal.	1.35 to 1.50
Pittsburgh	5.75 to 6.25

CAST IRON BORINGS

Birming., chem.	**8.50 to 9.50**
Birming., plain	2.50 to 3.00
Boston, chem.	5.50 to 6.00
Boston, dealers	1.00 to 1.25
Buffalo	**3.50 to 4.00**
Chicago	3.50 to 4.00
Cinci., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	3.75 to 4.25
Eastern Pa.	3.50 to 3.75
E. Pa., chem.	8.00 to 10.00
N. Y., deal.	1.00 to 1.50
Pittsburgh	5.75 to 6.25
St. Louis	2.00 to 2.50

PIPE AND FLUES

Cinci., deal.	3.25 to 3.50

RAILROAD GRATE BARS

Buffalo	4.00 to 4.50
Chicago, net	5.00 to 5.50
Cincinnati	4.25 to 4.75
Eastern Pa.	5.50 to 6.00
N. Y., deal.	3.50 to 4.00
St. Louis	4.50 to 5.00

FORGE FLASHINGS

Boston, dealers	2.00 to 2.50
Buffalo	5.50 to 6.00
Cleve. ov. 10 in.	6.00 to 6.50
Detroit	3.50 to 4.00

FORGE SCRAP

Boston, dealers	1.75 to 2.00
Chicago	6.50 to 7.00
Eastern Pa., del.	5.00 to 5.50

ARCH BARS, TRANSOMS

Chicago, net	5.00 to 5.50
St. Louis	3.50 to 4.00

AXLE TURNINGS

Boston, deal.	2.50 to 3.00
Buffalo	**6.00 to 6.25**
Chi., elec. fce.	4.50 to 5.00
Cleveland	5.50 to 6.00
Eastern Pa., del.	5.50 to 6.25
Pittsburgh, O. H.	7.00 to 7.50
St. Louis	3.50 to 4.00

STEEL CAR AXLES

Birmingham	9.00 to 9.50
Boston, ship. pt.	**5.50 to 6.50**
Buffalo	10.00 to 10.50
Chicago, net	9.00 to 9.50
Eastern Pa.	14.50
St. Louis	8.75 to 9.25

SHAFTING

Boston, ship. pt.	6.00 to 6.50
Eastern Pa.	11.50 to 12.50
N. Y., deal.	5.50 to 6.00
St. Louis	7.50 to 8.00

CAR WHEELS

Birming., iron	6.50 to 7.00
Boston, iron deal.	3.00 to 3.25
Buffalo, iron	7.00 to 8.00
Buffalo, steel	8.50 to 9.00
Chicago, iron	8.25 to 8.75
Chi., rolled steel	7.50 to 8.00
Cincinnati iron	6.25 to 6.75
E. Pa. iron	8.50
E. Pa. steel	8.50 to 9.00
Pitts., iron	8.00 to 8.50
Pitts., steel	9.50 to 10.00
St. Louis, iron	5.00 to 5.50
St. Louis, steel	6.00 to 6.50

NO. 1 CAST SCRAP

Birmingham	7.00 to 7.50
Boston, No. 2	2.25 to 2.50
Boston, textile	6.00 to 6.25
Buffalo, cupola	**9.00 to 9.25**
Buffalo (mach.)	9.50 to 10.00
Chicago, agri., net	5.25 to 5.75
Chi., mach. net	6.50 to 7.00
Chi., railroad net	5.75 to 6.25
Cinci., mach. cup	6.50 to 7.00
Cleve. cupola	7.00 to 8.00
Det., net deal.	6.50 to 7.00
E. Pa. cupola	8.50 to 9.50
N. Y., cup. deal	**4.50 to 5.00**
N. Y., del. local foundries	7.00 to 7.50
Pitts., cupola	9.00 to 9.50
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. L. No. 1	6.00 to 6.50
St. L. No. 1 mach.	6.25 to 6.75

HEAVY CAST

Boston, del.	3.25 to 3.50
Bost., mach. cast	7.00 to 7.50
Buffalo, break	**6.50 to 7.00**
Cleve., break	5.50 to 6.00
Detroit, auto net deal.	7.00 to 7.50
Det. break., deal.	4.00 to 4.50
Eastern Pa.	8.00 to 8.50
N. Y. No. 1, deal.	4.50 to 5.00
N. Y. break, deal.	4.00 to 4.50
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston, consum.	6.75 to 7.25
Buffalo	8.00 to 8.50
Chicago, agri.	5.00 to 5.50
Chicago, R. R.	6.50 to 7.00
Cinci., agri. del.	6.00 to 6.50
Cinci., R. R., del.	6.50 to 7.00
Cleveland, rail	7.50 to 8.00
Det. auto deal.	5.50 to 6.00
St. Louis	4.75 to 5.25

RAILS FOR ROLLING

5 feet and over

Birmingham	7.00 to 8.00
Boston, deal.	5.00 to 5.50
Buffalo	**7.00 to 7.50**
Chicago	8.00 to 8.50
Eastern Pa.	9.50
New York dealer	3.75 to 4.25
St. Louis	7.00 to 7.50

LOCOMOTIVE TIRES

Chicago, cut	7.50 to 8.00
St. L., No. 1	5.00 to 5.50

LOW PHOS. PUNCHINGS

Buffalo	9.00 to 9.50
Chicago	7.50 to 8.00
Eastern Pa.	8.50 to 9.00
Pittsburgh	10.00 to 10.50

seller is being prepared for shipment to Ashland, Ky.

Cleveland—Steel and iron scrap is stronger though prices have not been advanced. One steelmaker continues to accept shipments of No. 1 heavy steel and turnings at slightly higher prices than last month. A shipment of about 1000 tons of scrap by boat from Detroit has been received by another melter.

Chicago—Scarcity of scrap supplies at recent prices and price advances in eastern markets give a stronger tone in this district. Heavy melting steel is up 50 cents at $5.50 to $6, and several other grades are correspondingly higher. No new buying has been done by mills but dealers in some instances are paying $5.75 to cover on $5.50 orders and consumers would find difficulty in purchasing even moderate tonnages at $6.

Rock Island, Ill., arsenal closes on the sale of approximately 2050 tons of wrought and steel scrap April 18.

Boston—Scrap volume still is largely limited to water shipments, with some gain in such buying for eastern Pennsylvania and export. About 2000 tons of No. 2 for export was sold, also about 1500 tons of stove plate and automobile engine blocks for eastern Pennsylvania.

Shafting is firmer with dealers offering $6 to $6.50, shipping point.

New York—Scrap prices have a stronger tone, although higher prices in the Pittsburgh district still are too low to attract tonnage from this section. Activity centers in export volume on No. 1 and No. 2, additional business on the former grade having been booked for Japan. The barge price for No. 1 is unchanged at $5, but varies on loading points.

Buffalo—The new quarter has failed to bring out tonnage inquiry for scrap. Dealers are insisting on prices at or above the maximum quotations in the nominal list. Consumers show little interest although it is known some melters are nearing the bottom of their stock piles.

Philadelphia—Apart from continued buying of No. 1 steel for Japan, a 4000-ton shipment of which is expected to leave here this week, scrap buying recently has been light. Meanwhile, several grades have been advanced, with one grade, cupola cast, revised downward to a spread of $8.5 to $9.50, delivered.

Detroit—A much stronger market has resulted in practically every grade of iron and steel scrap being marked up, from 25 cents to $1.25. No. 1 steel and compressed sheets are now $5.50 to $6. Not only is there improved demand, but the general business outlook is a strengthening factor. The advances take into account increased offerings certain to result from expanding automobile production.

Cincinnati — Quotations on iron and steel scrap continue strong, but nominally unchanged. Somewhat higher bids were expcted on current railroad lists.

St. Louis—Though purchasing of iron and steel scrap still is limited, the trend is sharply upward, specific price advances having been made on several grades. Gray iron and malleable foundries have purchased small tonnages. Mills are quietly seeking supplies, and buying bargains.

Birmingham, Ala.—A better market is noted but prices have changed little. Heavy melting steel is holding at $6.50 to $7. Spot buying is the rule.

Toronto, Ont.—Trading in iron and steel scrap is almost at a standstill. Only one or two small orders for cast scrap were closed during the week and no inquiries are out either for spot or future delivery.

Carbon and Alloy Steels
Blue Annealed Sheets,
Sheared Plates: also Billets.

Rolled Steel Floor Plates
Diamond, Diamondette and Ribbed Patterns

Swede Pig Iron
Rainey-Wood Coke

ALAN WOOD STEEL CO.
ESTABLISHED
"A.W." TRADE MARK
1826
CONSHOHOCKEN, PA.

107 Years Iron and Steel Making Experience

ALAN WOOD STEEL CO.
CONSHOHOCKEN, PA.
Branch Offices:
Philadelphia, New York, Los Angeles, Seattle, San Francisco, Houston

Pig Iron

Higher Prices Firmly Held—Buying Continues in Larger Volume—Resume Silicon Extra

PIG IRON PRICES, PAGE 34

Pittsburgh—The only test of revised prices on pig iron as announced in STEEL, April 10, has been inability of buyers to negotiate for prospective lots at the old prices. In other words, although no actual business has been placed, there is every indication that on first buying these levels would govern. Several inquiries for foundry iron and a few carload negotiations for bessemer iron are reported pending. A trend has been noticeable by some foundries to inquire for cast scrap in increasing amounts. Most steel foundries are out of the market. Either the Edgewater Steel Co. basic iron inquiry was dropped or has been closed on quietly with a steelworks on a reciprocity basis, as the order has not been shared in by usual merchant iron suppliers. Prices now quoted are $14 for basic, $15 for malleable and foundry irons and $15.50 for bessemer, all Pittsburgh district furnace.

Cleveland—Shipments by furnace interests with headquarters here so far this month exceed the entire tonnage for March. Inquiries are more numerous, and sales have risen again, aggregating 5000 tons for the week. The market is stronger. Though Cleveland furnaces withdrew all prices below $14, base, for outside delivery, as noted last week, $14.50 now is more general than $14, and furnaces in adjacent competitive districts have been quick to take advantage. The 12-cent per ton emergency freight surcharge on intrastate pig iron shipments expired April 1, though railroads are seeking to have it renewed May 1. In the meantime, producers benefit; and some further advantage is derived from the fact that the surcharge continues in force on interstate shipments, making it more difficult for furnaces elsewhere to compete in Ohio. The local price holds at $15, base.

Boston—Pig iron sales are off from the recent moderate flurry, although several fair inquiries are not closed. More consumers show interest in third quarter. Recent firming of prices holds. Dutch iron continues to have the advantage in several districts. Several furnaces are re-establishing 25 and 50-cent differentials on No. 2X and No. 1X. Imports of India iron have been heavier, with sales at $15.50 to $16, dock.

Chicago—Additional improvement is recorded in pig iron demand. Orders and shipments show further gains. Automotive requirements continue outstanding. Malleable shops are more active, and production of railroad castings is increasing slowly. Little business is appearing from implement manufacturers. The market continues firm at $15.50, furnace, for No. 2 foundry and malleable. Coverage over this quarter has been more general than during the past quarter, and while some buying has been speculative, consumers anticipate a definite increase in requirements.

New York—Pig iron sales still are small and inquiry is light. Resumption of traffic on the New York state barge canal end of this month is expected to result in a small movement as stocks here are adequate.

Philadelphia — Following recent relatively good buying, demand for pig iron here has tapered. On the run of current business the new prices are holding, with silicon differentials maintained at 25 cents.

Buffalo—Improvement in pig iron demand is noted here. Inquiries and shipments have broadened materially, with prospect of further improvement ahead. For the first time in many months 25 cent differentials are being obtained on iron for eastern delivery. Minimum prices are not being encountered, as early this year.

Cincinnati—Interest in southern pig iron increased the past fortnight because of an impending price increase, but orders continued small, even though more numerous than earlier this year. No sales of silvery iron have been made to test reported higher quotations. Demand for northern iron has receded because early needs, at least, were covered before the recent advance.

St. Louis—A lively buying movement has been caused by the advance of $1 a ton in southern iron and 50 cents in northern. A fair volume of business was placed prior to the change, chiefly by stove interests and jobbing foundries. April shipments here will probably exceed March by 50 per cent. Many melters have covered fully for the second quarter and are inquiring for the third. Increasing talk of currency inflation has aroused interest in future needs.

Birmingham, Ala.—What little business is being received by furnace companies calls for immediate delivery. Surplus stock is being cut down slowly. Two blast furnaces may resume May 1. One blast furnace is on foundry, and one on basic.

Toronto, Ont.—A temporary flurry in merchant pig iron sales brought total awards for the week to around 400 tons. The daily melt is holding at about 12 per cent, with no indications of early improvement. Production is at a standstill. Prices are unchanged.

MORGAN
WORCESTER

Rolling Mills
Wire Mill Machinery
Producer Gas Machines
Combustion Control

Morgan Construction Company
Worcester, Mass.

European Representative
INTERNATIONAL CONSTRUCTION CO.
56 Kingsway, London, W. C. 2
England

Pacific Coast

Shape Lettings Gain Volume With Important Work on Way —Pipe Buying Shows Sharp Slump—Jetty Project Bids Lower Than Engineer Estimates—Scrap Situation Quiet

San Francisco—(*By Air Mail*)—The structural shape market showed the most activity during the week and awards aggregated close to 2400 tons. Important new projects include 10,000 tons of shapes for the Bohemian club, San Francisco, bids on which were opened April 15. Little change is noted in prices.

While numerous small reinforcing bar awards were placed, only two over 100 tons were reported. Pacific Coast Steel Corp. took 181 tons for San Quentin, Calif., and unnamed interests obtained 450 tons for two boulevard crossings in Los Angeles. Pacific Coast Steel Corp. was low bidder at 2.195c on 425 tons for the Chevy Chase reservoir, Glendale, Calif. Pasadena, Calif., will open bids April 18 for 500 tons for the Pine Canyon dam. and San Francisco will open bids June 14 for 200 tons for a ward for the General hospital. Out-of-stock prices in the Los Angeles and San Francisco districts are general at 2.00c, c.i.f. Mild steel bars are not in active demand and 2.10c c.i.f. appears general.

Western Pipe & Steel Co. booked 100 tons of plates for 16 tanks for the Metropolitan water district, Los Angeles. Prices are weak at 1.85c, c.i.f.

Consolidated Steel Corp. booked 450 tons of shapes for a blending plant at Boulder City, Nev., for the Six Companies and 425 tons for the Silverlake, Sunset and Temple crossings for Los Angeles. Largura Construction Co., Gary, Ind., is low bidder on 800 tons for a postoffice at San Diego, Calif., and Great Lakes Construction Co., Chicago, is low on 500 tons for a postoffice at Phoenix, Ariz. San Francisco will open bids June 14 on 735 tons for a ward for the General hospital. Bids are being taken on 260 tons for an apartment in the same city. Plain shapes hold at 2.10c, with wide flange material quoted at 2.20c. c.i.f.

Seattle Plans Large Work

Seattle—Sales of iron and steel products in the Pacific Northwest consist of unimportant tonnages. While few large projects are under consideration, the trade is hopeful and professes to see a slight general improvement. An encouraging feature is steadiness of mill and warehouse prices. Plates are holding at 1.85c, and bars and shapes at 2.10c.

Seattle city council has sent J. D. Ross, city light superintendent, to Washington to request $18,500,000 from the R. F. C. for early development of the Ruby dam project, a unit of the city's Skagit river hydroelectric plan. The largest jobs for immediate action are three Seattle improvements, all involving large quantities of steel. Bids will be opened April 26 for Diablo powerhouse, and April 27 for replacement of Cedar river pipe lines, 6400 feet of 78-inch main. Guy F. Atkinson, Portland, Oreg., was low bidder at $1,686,403 for reconstructing the south jetty at the mouth of the Columbia river and award is expected shortly. This figure was $400,000 below estimates made by federal engineers.

Steel in Europe

British Output Makes Sharp Gain—Continental Prices Up

London—(*By Radio*)—Pig iron and steel production in Great Britain in March made a decided gain over February, pig iron making the best record since March, 1932, and steel the largest total since September, 1930. Pig iron production in March was 332,200 tons, a daily average of 10,716 tons, from 70 furnaces, compared with 270,800 tons in February, a daily average of 9671 tons, from 63 furnaces. Steel production in March was 577,700 tons, compared with 482,700 tons in February.

Pig iron is in improved position in Middlesbrough, inquiries from a wide area inspiring confidence. Midlands trade continues disappointing except in special automotive steels.

The Continent reports a marked price advance following reorganization of the steel entente. Japan is buying heavily. France is negotiating steel contracts with Russia. The French and international hoop syndicates have been renewed.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, April 13

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON	£ s d		£ s d	£ s d
Foundry, 2.50-3.00 Silicon	$10.09	2 18 6	$8.27	1 14 0
Basic bessemer	9.32	2 14 0*	6.81	1 8 0
Hematite, Phos. .03-.05	10.18	2 19 0	.....	.....
SEMIFINISHED STEEL				
Billets	$17.25	5 0 0	$10.46	2 3 0
Wire rods, No. 5 gage	25.88	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$26.74	7 15 0	$26.77	5 10 0
Merchant bars	1.00c	6 10 0	.55c to .58c	2 10 0 to 2 12 6
Structural shapes	1.14c	7 7 6	.50c to .51c	2 5 0 to 2 6 0
Plates, †¼ in. or 5 mm.	1.31c	8 10 0	.77c to .80c	3 10 0 to 3 12 6
Sheets, black, 24 gage or 0.5 mm.	1.31c	8 10 0	1.29c	5 17 6
Sheets, gal., 24 gage, corr.	1.62c	10 10 0	1.46c	6 12 6
Bands and strips	1.19c	7 15 0	.77c to .80c	3 10 0 to 3 12 6
Plain wire, base	1.35c	8 15 0	1.18c	5 7 6
Galvanized wire, base	1.62c	10 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.85c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$ 2.72	0 15 9	.....	.....

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.78	3 2 6†	$ 7.98	200	$ 8.15	290	$16.46	69
Basic bessemer pig iron	10.18	2 19 0†*	6.78	170	6.18	220	18.01	75.50
Furnace coke	2.29	0 13 3	4.79	120	3.09	110	4.59	19.25
Billets	17.25	5 0 0	14.76	370	10.54	375	23.02	96.50
Standard rails	1.27c	8 5 0	1.25c	697	1.50c	1,150	1.43c	132
Merchant bars	1.04c	6 15 0	.95c	530	.61c	470	1.19c	110
Structural shapes	1.35c	8 15 0	.99c	550	.60c	460	1.16c	107.50
Plates, †¼-in. or 5 mm.	1.35c	8 15 0	1.22c	680	.78c	600	1.37c	127
Sheets, black	1.46c	9 10 0§	1.53c	850‡	.91c	700‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.81c	11 15 0	2.43c	1,350	1.82c	1,400	4.00c	370
Plain wire	1.35c	8 15 0	2.03c	1,130	1.69c	1,300	1.91c	177
Bands and strips	1.46c	9 10 0	.90c	500	.88c	675	1.37c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.
(a) dd. Middlebrough

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 5.75c, Conn., for copper

SHEETS	
Yellow brass (high)	11.25
Copper, hot rolled	13.87½
Lead sheets, cut, to jobbers	7.00
Zinc sheets (100-lb. base)..	9.00
TUBES AND PIPES	
Seamless yellow brass (high)	13.50
Seamless copper	12.62½
RODS	
Yellow brass (high, full turning)	8.75
Naval brass	9.87½
ANODES	
Copper, untrimmed	10.75
WIRE	
Yellow brass (high)	11.25

Old Metals

Dealers' buying prices, cents lb.

NO. 1 COMPOSITION RED BRASS	
New York	2.50 to 2.62½
Chicago	2.25 to 2.50
Cleveland	2.50 to 3.00
St. Louis	2.25
HEAVY YELLOW BRASS	
New York	1.62½ to 1.75
HEAVY COPPER AND WIRE	
New York	3.62½ to 3.87½
Chicago, No. 1	3.25 to 3.37½
Cleveland	2.75 to 3.25
St. Louis	2.50
COMPOSITION BRASS BORINGS	
New York	2.25 to 2.50
YELLOW BRASS TUBING	
Cleveland	1.75 to 2.25
LIGHT COPPER	
New York	2.75 to 2.87½
Chicago	2.25 to 2.37½
Cleveland	2.50 to 2.75
St. Louis	2.25
LIGHT BRASS	
Chicago	1.25 to 1.37½
Cleveland	1.25 to 1.50
St. Louis	1.25
LEAD	
New York	2.00 to 2.12½
Cleveland	1.75 to 2.25
Chicago	1.87½ to 2.12½
St. Louis	2.00
ZINC	
New York	1.12½ to 1.25
Cleveland	1.00 to 1.12½
Chicago	1.00 to 1.25
St. Louis	1.25
ALUMINUM	
Clippings, new, soft, Cleve.	9.50 to 10.50
Clippings, hard, Cleveland	6.00 to 7.00
Borings, Cleveland	2.50 to 3.50
Mixed cast, Cleveland	4.25 to 5.25
Mixed cast, St. Louis	4.00 to 4.25

Secondary Metals

Brass ingot, 85-5-5-5	5.75
Remelt aluminum No. 12..	8.00 to 9.00

Metals

Quotations on Copper, Lead, Zinc and Tin Push to Higher Levels—Antimony Lacks Test

New York—Quotations generally pushed to higher levels in the metal market last week. Included in the advance were copper, lead, zinc and tin. Antimony was slow. Nickel and aluminum were quiet.

Copper—Electrolytic metal was quoted as high as 5.50c, Connecticut, by custom smelters last week on reports that producers in this country may virtually shut down this summer. The proposed six-month production holiday would result in a reduction of about 120,000 tons in present surplus stocks based on current consumption of around 20,000 tons monthly. Stocks still would top 500,000 tons at the end of the period, however. Domestic buying was only moderate but foreign consumers came in to the market for fair tonnages as prices advanced. Brass ingot advanced ¼-cent. Copper and brass products went no higher since present quotations are based on 5¾-cent metal.

Lead—Prices were boosted ¼-cent Tuesday following good demand, particularly in the Midwest, where the leading sellers initiated the price rise. Other sellers immediately followed with advances. Fair purchases were made at the higher prices of 3.25c, New York, and 3.12½c, St. Louis.

Tin—Prices were generally higher at around the 26-cent level. Fair business was done in spot through July positions. Spot metal continued at a premium over later positions due to scarcity.

Antimony—The market had little test. Prices were practically unchanged although some sellers asked slight premiums on lots of less than 25 tons.

Zinc—Scattered carlots comprised the bulk of the business in prime western metal last week. Sales for the period probably were less than 6000 tons, against 8000 tons in the preceding week and 1100 tons two weeks ago. Prices advanced $2 a ton Monday to 3.10c, East St. Louis, and 3.45c, New York. Recent purchases have been made principally by galvanizers. Renewed curtailment in the Tri-State ore district is giving the zinc market a firmer appearance.

Aluminum—Sales were moderate. Reports of shading in virgin metal continued. Remelt was steady.

By-Products More Active

New York—Slight seasonal improvement is noted in demand for toluol, benzol and naphthalene. Prices are firm. Sulphate of ammonia shipments also reflect seasonal activity.

Coke By-Products

	Spot
Per Gallon, Producers' Plants, Tank Lots	
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.30
Solvent naphtha	0.26
Comercial xylol	0.26
Per Pound at Producers' Plants in 250-Pounds Drums	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants	
Naphthalene flakes	4.75 to 5.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10

Quicksilver Steady

New York—Quicksilver continues quiet, with small lots steady at $53.50 to $54.50. Round lots may be had at $53 although some sellers regard the bottom of the market as $54.

Nonferrous Metal Prices of the Week, Cents a Pound

Spot unless otherwise specified

	Copper			Straits Tin		Lead	Lead	Zinc	Aluminum	Antimony	Ingot
	Electro., del. Conn.	Lake, del. Midwest	Casting, refinery	New York Spot	New York Futures	N. Y.	East St. L.	St. L.	98-99%	Spot, N. Y.	Nickel
April 8	5.25	5.37½	5.00	25.37½	25.35	3.00	2.87½	3.00	*22.90	5.55	35.00
April 10	5.37½	5.62½	5.12½	25.50	25.50	3.00	2.87½	3.10	*22.90	5.55	35.00
April 11	5.37½	5.62½	5.12½	25.60	25.55	3.25	3.12½	3.10	*22.90	5.55	35.00
April 12	5.37½	5.50	5.12½	25.50	25.55	3.25	3.12½	3.10	*22.90	5.60	35.00
April 13	5.37½	5.50	5.12½	25.87½	25.95	3.25	3.12½	3.10	*22.90	5.60	35.00
April 14	5.37½	5.50	5.12½	25.85	25.95	3.25	3.12½	3.10	*22.90	5.60	35.00

*Nominal quotation. Market range 17.90c to 22.90c.

Construction and Enterprise

New Jersey

GARWOOD, N. J.—Thatcher Co., manufacturer of furnaces, recently placed in receivership, has resumed production after a shutdown for inventory. Production will be continued steadily.

PLAINFIELD, N. J.—Electroloy Co. has been incorporated with 100 shares no par value to manufacture metals, by Roy M. Taylor, attorney, Plainfield, N. J.

Pennsylvania

PITTSBURGH—Johnston & McIntyre, Sharon, Pa., is low bidder at $9870 for construction of floodgates in the Pymatuning dam.

PITTSBURGH—Midland Barge Co., Midland, Pa., has been awarded a 15-ton steel hull derrick boat for Chicago engineers. It will carry an 85-foot boom, with clamshell bucket and drag line.

PITTSBURGH—Koppers Rheolaveur Co., a subsidiary of the Koppers Co., Pittsburgh, will build an anthracite coal-washing plant for the Sherman Coal Co., Pottsville, Pa., the contract involving about $250,000.

PITTSBURGH—Enterprise Contracting Co., Pittsburgh, will drive mooring piles and improve the landing on the Monongahela river at Rankin, Pa., at the plant of the McClintic-Marshall Corp.

Ohio

ASHTABULA, O.—New York Central railroad has recalled 70 men to work in its steel car shops, to be engaged in scrapping old steel cars.

CLEVELAND—The Furnace & Boiler Parts Co. has been incorporated with 100 shares no par value by Malvern E. Schultz, 1216 Scofield building, and associates.

CLEVELAND — Architectural Metals Corp. has been incorporated with 200 shares no par value to manufacture metal products, by Geutsch & Lang, 1548 Standard bank building, Cleveland.

Michigan

DETROIT—Meter Duplicators Inc. has been incorporated with $10,000 capital to manufacture mechanical devices, by C. L. McMullen, 613 Abbott street, Detroit.

DETROIT—Judd Co., 440 Brainard street, has been incorporated with 200 shares no par value to move, erect and scrap machinery, by Joseph J. Shannon, 9041 Martindale avenue, Detroit.

DETROIT—Keystone Distributing Co., 9421 Oakland avenue has been incorporated with $1000 capital to manufacture hardware, by David Levit, Belcrest apartments, Detroit.

DETROIT—Vinco Tool Co. has been incorporated with 2500 shares no par value to manufacture gages and tools, by Ralph A. Putnam, 7350 Central avenue, Detroit.

DETROIT—L. M. Payne Co. has been incorporated with $1000 capital to manufacture automotive materials, by Lambert M. Payne, 9311 Wildemere avenue, Detroit.

Indiana

ANDERSON, IND.—Hill Standard Corp. is moving its playground equipment division from Kokomo, Ind., to Anderson, and will consolidate it with the main plant here, at Twenty-second street and the Big Four railroad. An additional building may be needed to house its activities.

SOUTH BEND, IND.—Assets of the Colin B. Kennedy Corp., manufacturer of radio equipment, will be sold at auction April 19 at the plant, 212 West Ewing avenue, South Bend, by Michael Tauber & Co., auctioneers. Machine tools, small tools and factory equipment, motors and testing equipment are included.

Illinois

CHICAGO—J. Clark Refining Corp., 132 North State street, has been incorporated with $15,000 capital to carry on a business in metals, by L. Fairfield, 2230 North LaPorte avenue, correspondent.

CHICAGO—Frogtown Refinery Inc., 33 North LaSalle street, room 927, has been incorporated with 2000 shares no par value to drill for and transport oil, by Simon A. Murray, 33 North LaSalle street, and associates.

CHICAGO — Maremont Automotive Products Inc., 1625 South Ashland avenue, has been incorporated with $100,000 preferred and $172,500 common stock, to manufacture automotive and other vehicles, by Rosenberg, Corlett & Toomin, 11 South LaSalle street.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids as follows: April 18, schedule 9903, one electric furnace for delivery to Norfolk, Va.; April 25, schedule 9883, 50 universal couplings for delivery to Mare Island, Calif.; schedule 9890, two motor-driven engine lathes for delivery to Brooklyn, N. Y.; schedule 9917, two motor-driven circulating pumps for delivery to Sewall's Point, Va.; schedule 9923, three motor-driven automatic screw machines for delivery to Newport, R. I.; schedule 9924, three motor-driven lathes for delivery to Brooklyn, N. Y.; schedule 9927, one motor-driven milling machine, for delivery to Philadelphia; schedule 9939, one hydraulic testing machine, for delivery to Mare Island, Calif.; schedule 9942, one crawler-type tractor for delivery to Pensacola, Fla.

SANFORD, N. C.—The machine shop of the Edwards Railway Motor Car Co., on the Atlantic & Western railway tracks, has been severely damaged by fire.

Wisconsin

MILWAUKEE—Bids will be taken early in May by the board of school directors for a boilerhouse, fan room and other additions to the Thirty-fifth street school, to cost about $65,000. F. M. Harbach is secretary of the board.

MILWAUKEE—C. H. Hubbard, superintendent in charge of lighthouses, will take bids until April 10 for a lighthouse to cost about $170,000 on North Manitou island, in Lake Michigan.

MILWAUKEE—R. Perlick Brass Co., 1125 North Ninth street, is moving to larger quarters at 1825 West St. Paul avenue to facilitate increased output of brewers' and bottlers' supplies, filling and tapping equipment. The new plant gives an increase of 5000 square feet to 15,000 square feet.

NIAGARA, WIS.—Kimberly Clark Co., 128 North Commercial street, Neenah, Wis., will remodel and enlarge its paper mill here at a cost of about $75,000 for buildings and equipment. E. W. Pridde is manager at Niagara.

Pacific Coast

ELLENSBURG, WASH. — Voters have rejected the proposal that the city buy the water system from the Ellensburg Gas & Water Co., at $40,000.

SEATTLE—Western Containers Inc. has plans for a 1-story factory and warehouse on the east side of East Marginal way 254 feet long, 75 feet wide in front and 150 feet wide at the rear, with 27,000 square feet of floor space. A special plant will furnish live steam for process fiber work. Cost will be $35,000 to $40,000. Contract for the building has been let to the Austin Co. V. J. Walsh is managing director of Western Containers Inc. The present plant is at 5035 East Marginal way.

SPOKANE, WASH. — Northwest Magnesite Co. has increased operations at its plant at Chewelah, Wash., now having two kilns active and producing at 40 per cent of capacity.

VANCOUVER, WASH.—Northwestern Electric Co. is offering for sale the machinery and equipment used in building the Ariel dam, now stored at Woodland, Wash., including tractors, derricks, forges and other material.

Dominion of Canada

HAMILTON, ONT.—Tugend Razor Blade Co. has been organized by E. Tugend, Toronto, Ont., to manufacture razor blades. Harold F. Ritchie Co. will be in charge of sales and distribution.

STAMFORD, ONT.—Canadian Ohio Brass Co., subsidiary of the Ohio Brass Co., Mansfield, O., which recently sold its manufacturing site at Niagara Falls, Ont., has bought a site here and will largely increase its output through construction of a new main works building. (Noted Feb. 20.)

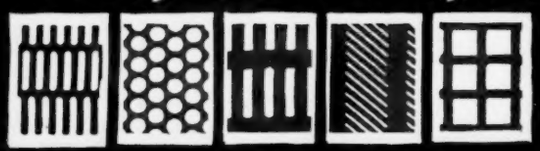
WEIRTON

Producers of Pig Iron; Open Hearth Steel; Billets—Slabs—Sheet Bars—Skelp; Angles, Beams and Channels; Round, Square and Flat Bars; Rails—Steel Plates—Tie Plates—Track Spikes—Splice Bars; Reinforcing Bars; Coke Tin Plate; Kanners Special Cokes—Best Cokes—Charcoals; Lacquered Tinplate; Tin Mill Black Plate (All Finishes); Lacquered Black Plate; Copper Bearing Terne Plate; Hot and Cold Rolled Strip Steel and Strip Steel Sheets; High Finish Sheets; Long Terne Sheets (Common and Special Finishes); Galvanized, Black and Blue Annealed Sheets; Corrugated Sheets, V Crimp Sheets, Roll Roofing; Single Pickled, Full Finished and Auto Body Sheets; Coke—Tar—Benzol—Toluol—Ammonium Sulphate.

WEIRTON STEEL CO.
WEIRTON, W. VA.
Division of National Steel Corporation
Sales Offices in All Principal Cities

SAVE WITH STEEL

PERFORATED METAL
Of Every Sort For Every Use



THE HARRINGTON & KING PERFORATING CO.
5634 FILLMORE STREET - CHICAGO, ILL.
New York Office, 114 Liberty Street

HANNA PIG IRON

BRANDS:
Buffalo—Detroit—Susquehanna

GRADES:
Foundry—Malleable
Silvery—Ferro-Silicon

The HANNA FURNACE CORP.
MERCHANT PIG IRON DIVISION
OF NATIONAL STEEL CORP.
Buffalo, New York Detroit, Mich.
New York Philadelphia Boston

THE BURDEN IRON COMPANY
TROY, N. Y.

Manufacturers for More Than a Century of High Grade Wrought Iron Products

Staybolt Iron—both Solid and Hollow Rolled
Drilled Staybolts
Engine Bolt Iron and Chain Iron
Iron Rivets and Rivet Iron
"Burden Best" and "H. B. & S." Iron

General Office: Troy, N. Y.
Branch Offices: 250 Park Ave., New York
310 So. Michigan Ave., Chicago.

Second Edition

The Theory and Practice of Rolling Steel

By Prof. Wilhelm Tafel
Translated by Richard Rimbach

312 Pages—6 x 9 Inches
12 Tables—165 Drawings

THIS second edition is completely revised and brought up-to-date, covering every angle of the design, construction and operation of the steel rolling mill—a complete treatise on rolling mill practice.

It discusses every phase and problem of rolling mill and roll design from blooming mill to the most intricate shapes. It deals with spreading, forward slippage, gripping, side work and every one of the problems involved in rolling every kind of rolled steel product made, and all in the most clear and thorough fashion.

It is a book that it would pay every mill superintendent or foreman, every roll designer or turner, every steel works engineer, and all executives and operating officials to have—a complete authoritative encyclopedia on every phase of rolling steel.

Price Postpaid: $6.15 in U. S. and Canada—30s. 6d. in other Countries

Buyers in Europe should send orders direct to our office at Caxton House, Westminster, London, S. W. 1.

The Penton Publishing Co.

1213 W. 3rd St. Book Department Cleveland, O. 223-S.D